

Western Industry

November 1957

Vol. XXII
No. 11

UP QUALITY . . . DOWN WITH REJECTS

Headaches because you're losing thousands of dollars due to bad workmanship and defective parts? Try this cure . . . p. 39



This overhead conveyor line in a Western furnace plant is an ingenious adaptation from automobile production line equipment. It's how . . .

Automotive Handling Speeds Production

. . . p. 41

ALSO: Yours for the asking . . . 25 manuals on fans and blowers (p. 65) . . . 20 manuals on dust collectors (p. 68) . . . 25 know-how magazines (p. 71)



"...operate in a vacuum"



"...favorable climate of opinion"



"...get what the story deserves"



"...and improve communications"

What public relations can do for you

p. 47



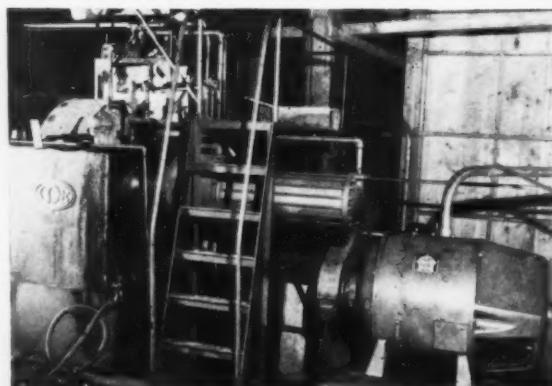
● One in a series on the application of electric motors in modern industry

The superior performance of Reliance equipment throughout the industry convinced the Pope & Talbot Veneer Mill, Port Gamble, Washington that there is no more dependable or efficient method of producing veneer than on a lathe powered by a Reliance Drive.

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D-1551

Write for Bulletin A-1555-A.



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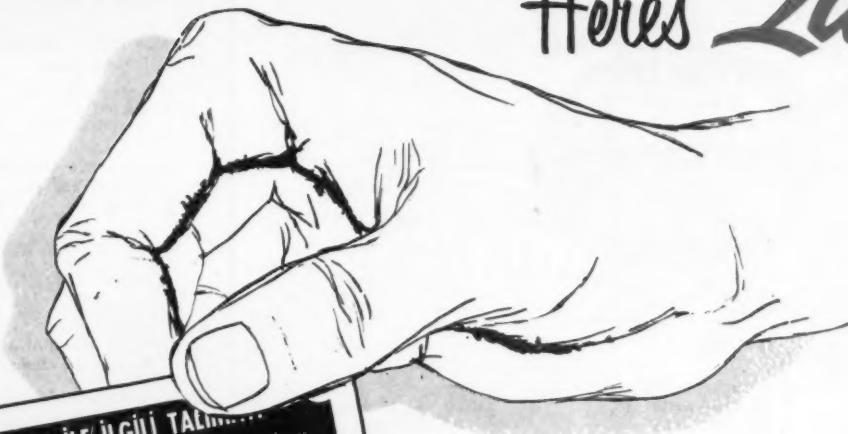
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Here's Lufkin



ÇALIŞMA İLE İLGİLİ TALİMAT

1. CİHAZI KURARKEN TEVZİN PİMİ RULMAN YATAĞININ İYİCE TEMİZLENMESİNE DİKKAT ET.
2. "STROKE" U DEĞİŞİTRİRKEN KRANK PİMİ DELİKLERİNİN İYİCE TEMİZLENMESİNE DİKKAT ET.
3. MUVAZENE AĞIRLIĞINI İLÂVE EDERKEN YOLLARI VE YARIKLARI TEMİZLE. MUVAZENE AĞIRLIĞININ EMNİYET PARÇASINI İHTİVA EDEN UCU KRANKIN UZUN UCUNA DOĞRU OLMALIDIR.
4. ÇALIŞTIRMAŞA BASLAMADAN EVVEL MAKARA VE FREN KAMALARI İLE KRANK PİMİ SOMUNLARINI İYİCE SIKIŞTIR.
5. ANI FREN YAPMA. KUVVETİ TEDİRİCEN ARTIRARAK FREN YAP.

YAĞLAMA

KÜKÜRT Veya KÜKÜRT MÜREKKİPLERİNİ İHTİVA EDEN YAĞLARI KULLANMA.

"PİTMAN" KARNAK KOLU: VİTES KUTUSU İÇİN KULLANILAN YAĞ AYNNINI KULLAN. YAĞI KAPAK ÜZERİNDE YAĞ SEVİYESİNİ GÖSTEREN TAPA HİZASINA KADAR DOLDUR. FAZLA YAĞ SIZİNTİLƏRƏ SEBİBİYET VERİR. YAĞI HAFTADA BİR KONTROL ET VE ALTI AYDA BİR DEĞİŞTİR.

MERKEZ RULMANI, ASKİ, VE TEVZİN RULMANLARI: YÜKSEK TAZYİKLERE DAYANAN VE AKMA NONTASI - 15 DERECE C OLAN SAE 140 NUMARALI BİR YAĞ KULLAN.

SURETİYLE DOLDUR. ASKİ VE TEVZİN RULMANLARINI BLOF YERLERİNDEN YAĞ TAŞINÇAYA KADAR DOLDUR. YAĞI HAFTADA BİR KONTROL ET VE ALTI AYDA BİR DEĞİŞTİR. YEDEK PARÇA İSMARLARKEN EBAT, SERİ NUMARASI VE SİPARİŞ NUMARASINI BİLDİR.

"talking turkey"

ÇALIŞMA İLE İLGİLİ TALİMAT?

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NOVEMBER, 1957

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DEPARTMENTS

Views and Comment	13	The Industrial West on Its Way	103
Western Meeting Reports	18	Classified Advertising	115
Helpful Literature	74	Advertisers in This Issue	116
New Equipment	88		

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By concentrating on filtration engineering and manufacturing exclusively for over 30 years, Sparkler is able to offer a solution to practically all filtration problems without expensive experimentation.

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WESTERN INDUSTRY — November 1957



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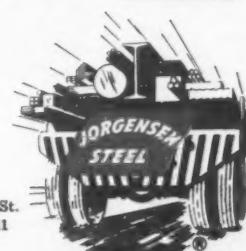
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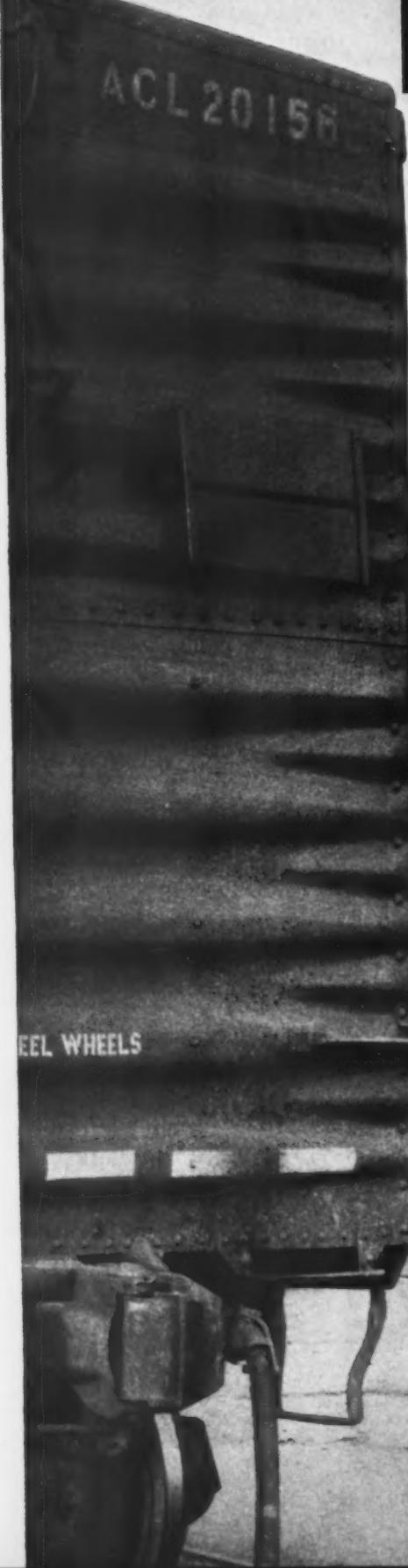
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with fully automatic transmission

GIVE INSTANT POWER

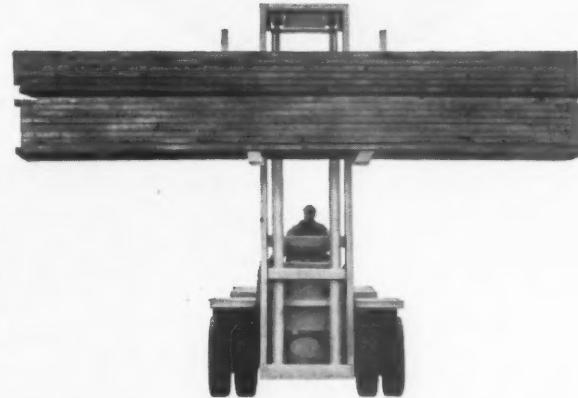
for smooth, fast-cycle handling of loads up to 20,000 lbs. under all operating conditions

AUTOMATIC POWER CONTROL. These Yale trucks supply power the instant it's needed...for fast starts or climbing grades...for accurate inching while capacity loads are lifted at speeds up to 60 feet a minute. Loads are spotted fast!

FAST-CYCLE OPERATION. Power steering, power brakes, separate inching control, small turning radius plus automatic transmission make maneuvering easier than ever. No more clutching or shifting of gears—the driver moves his truck in and out of tight areas fast! Travel speeds up to 20 miles per hour. Result: More trips per hour—more volume per day—a less tired operator.

GREATER STABILITY. No sudden shocks or jerks—automatic transmission delivers right amount of power for smooth starts and travel. Lowering is fast and controlled. Low center of gravity, broad lifting base, side-thrust rollers keep loads steady at all points of lift. H-beam side members in frame for extra strength. Anti-cavitation valve in tilt cylinders adds to channel stability. Large, high-flotation pneumatic tires give good traction for smooth ride up ramps and over rough terrain.

Yale G-3 Series High-Capacity Gas and LP-Gas Trucks are also available with Fluid Coupling or standard transmission. All models are designed for attachments—engineered for minimum loss distance.



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The Yale G-3 Series Gas Truck gives the operator 300% more visibility than any other truck of its type! Channels are wide-spaced, nested to reduce frontal obstruction. Hoisting cylinders next to channels, out of line of sight. Wide channel spacing and open carriage design give maximum straight-ahead visibility *plus* the widest possible arc of vision at all levels of fork lift. Forward and to the rear, the driver has full visibility to speed big-load handling with complete safety.

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NO GROWTH

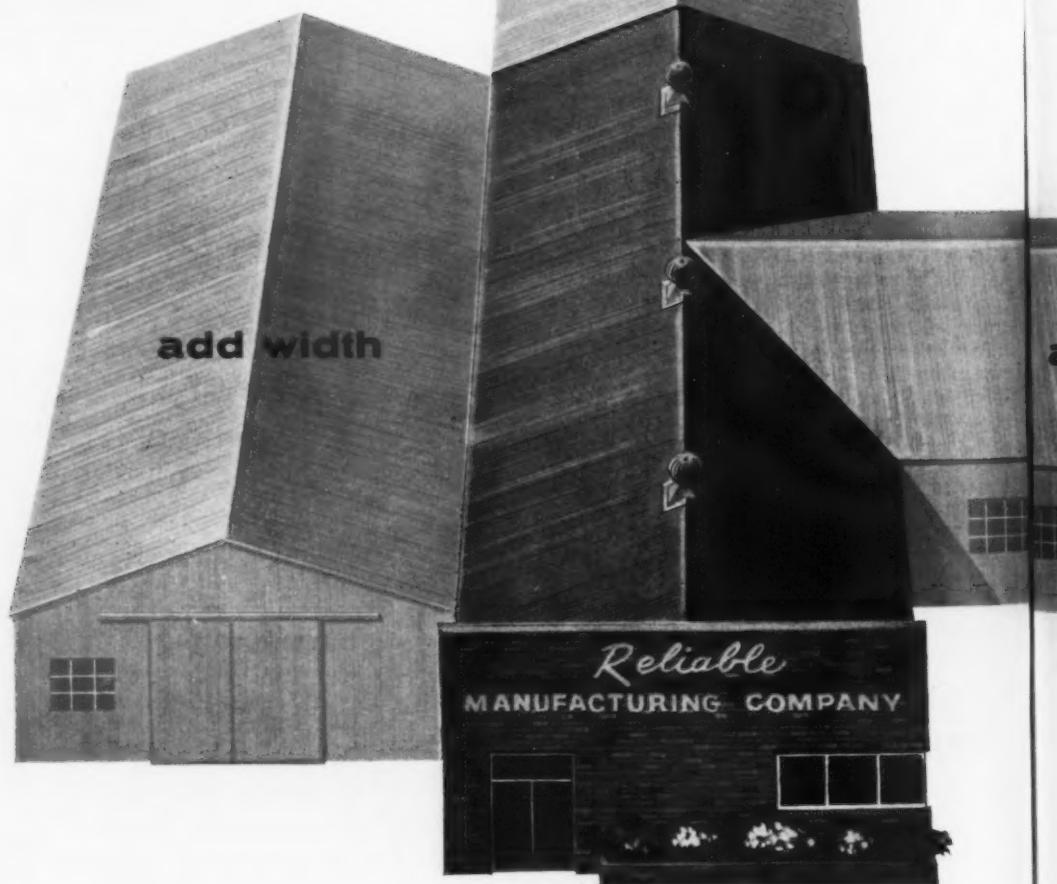


with all-bolted

add length

add width

Reliable
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WING PAINS

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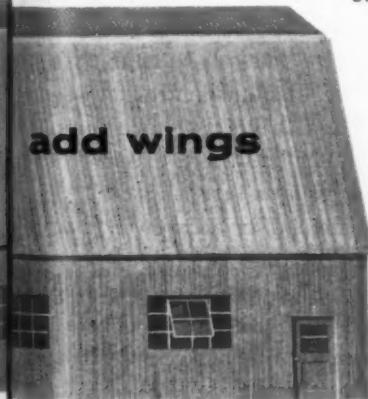
Start your new plant facilities in a low-cost Soulé Building that exactly fits your needs and budget. Then later, when increased business demands expansion of your plant, you'll be money ahead. That's because all-bolted Soulé Buildings expand quickly and economically. Our own erection crews arrive on the job, remove siding, add on new frames and cover the new building. That's all! Clean and quick—with the existing building completely usable during expansion.

Money-saving Soulé Building advantages:

Easy to add length or width	New buildings erected for use in days
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Backed by the West's largest metal building manufacturer	

Investigate low-cost Soulé Buildings. You'll be pleased at how economically your business can grow with clear-span Soulé Buildings.

add wings

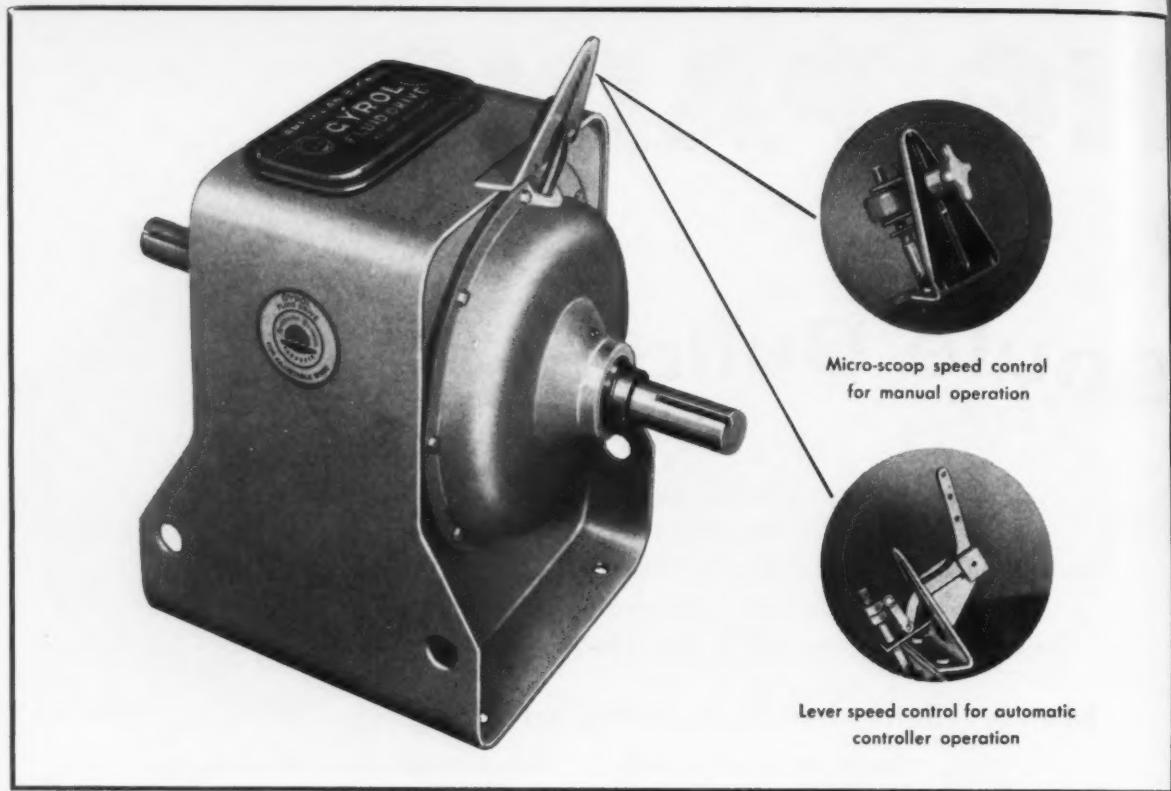


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American Blower Gýrol® Fluid Drives now available in lower horsepower ranges!



Type VS, Class 2 Gýrol Fluid Drives for 1- to 25-hp applications. Also available with flange-mounted motor, as shown.

Adaptable to either automatic or manual control, American Blower Type VS, Class 2 Gýrol Fluid Drives come in a complete range of new smaller sizes—1 hp to 25 hp, speeds to 3600 rpm—to satisfy your every power-transmission need!

These compact, self-contained units offer an answer to many industrial-drive problems because of their important benefits: adjustable, stepless speed control; full reversibility; 5 to 1 speed range; no-load starting; protection against shock; quiet operation.

For full information on the complete line of Type VS, Class 2 Gýrol Fluid Drives, 1-800 hp—or other designs to 12,000 hp—contact our nearest branch office. Or write: American Blower Division of American-Standard, Detroit 32, Michigan. In Canada: Canadian Sirocco products, Windsor, Ontario.

AMERICAN BLOWER

Division of **AMERICAN-Standard**



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WESTERN INDUSTRY — November 1957

How eager are you for the giant Western industrial equipment exposition?

HOW eager is the West for a big, new, broad-scope equipment trade show? You recall our editorial in the July issue pointing out the need for a giant WESTERN INDUSTRIAL EQUIPMENT EXPOSITION. We described how the majority of trade shows now in the West are local affairs staged in hotel ballrooms or small edge-of-town meeting halls—low in attendance, limited in value to the men who come to learn, and hard on the budget of exhibitors . . .

And you recall how we stated that only the big WESTERN INDUSTRIAL EQUIPMENT EXPOSITION will satisfy all of the needs that Western industrial men have. The Exposition ideally would have many hundreds of exhibits displaying the entire range of equipment and materials needed for successful plant operation . . . and backing up the giant Exposition should be all the broad-gage industrial technical societies who would arrange a concurrent series of conferences . . .

Well, what did you readers think of it?

Here's how you lined up: (about 100 responding)

66.8% were "strongly in favor of the big Exposition soon;"

23.4% "thought it might be a good thing;"

9.8% "did not believe it would do much good."

Now, let's analyze the response in each category. Of those "strongly in favor,"

57.1% were plant operating executives . . .
19.9% were manufacturers and distributors . . .
11.5% were technical society officers . . .
11.5% were consultants, purchasing agents, advertising managers and others.

A typical letter reads:

" . . . with the present plant expansion and with the new company development that has been taking place in the West, a broad-scope equipment show is definitely needed. The exhibition should include the very latest equipment developed for manufacturing and plant operations . . . a Western trade show as you have explained will also provide local suppliers with an opportunity to exhibit their products. Manufacturers in turn will be stimulated to deal with suppliers in the Western area, which would result in overall production increases in this area."

(from an industrial engineer,
Los Angeles chemical company)

Now, how about those who "thought it might be a good idea."? These responses broke into:

50% sales executives and consultants
27% plant operating executives
23% manufacturers and distributors

A typical letter reads:

"I am impressed with the imaginative scope of your suggested Western Industrial Equipment Exposition, but would point out some practical difficulties.

"First, where would you find, in one location, sufficient exhibit space? To house only 8 or 10 of the larger shows now held annually or semi-annually at various spots in the East and Midwest would require at least one million square feet of display area . . .

"Second, where is there sufficient hotel space to accommodate 100,000 attendees plus personnel of exhibitors; or enough facilities for feeding them?

"Third, even if you had the area to manage such an exposition, you would not be able to persuade a large proportion of the industrial exhibitors you envisage, to participate in an extra show, i.e., in addition to their big national affair. And to arrange a schedule so that all could hold their national shows in the West at the same time, even once, would take at least 7 or 8 years, because most of them are already scheduled at least five years ahead . . ."

(from an advertising manager
Eastern industrial control firm)

How about those who "do not believe it would do much good"?

50% were sales executives or show people
37.3% were manufacturers and distributors
12.7% were from plant operating executives

A typical letter reads:

"We are in a specialized industry and in the past, such shows have been designed and directed to specific industries and have been held in conjunction with each industry's various conventions and meetings. This provides a joint incentive for the expenses involved, both from the standpoint of the exhibitor as well as for the personnel to whom the shows are directed.

"Recent specific industry shows have grown to the point where it takes several hours for visitors to take full advantage of all the exhibits presented, and in the event many industries were combined, it is likely that the very size would discourage visitors from attempting to cover the entire area.

"The extensive scope indicated would likely detract from the value of the exhibit from the ex-

hibitor's standpoint as it would mean sharing the time spent by visitors with numerous other exhibitors. Along these lines, it has been our experience that very frequently only short interviews were available because the visitor was pressed for time and wished to cover as much as possible of the show in the time allotted to him."

(from an owner, industrial equipment firm)

Now, where does that leave us? The majority agree that they *want* and *need* such a giant exposition . . . but a few readers have pointed out hurdles that will have to be jumped before we're off and running.

Well, here's a letter that advances an idea of how to get the show on the road:

"At the last meeting of the Society of Industrial Packaging & Material Handling Engineers it was unanimously voted to completely support your excellent idea for a big, broad-scope equipment trade show.

"It is felt that there is a distinct need, today, for Western plant operating executives to have available to them a broad **working** knowledge of industrial equipment and materials. This can not be satisfied with the present limited scope of the specialty shows that are now put on here. A truly educational equipment exposition must be **broad** in its scope.

"Now, frankly, talking about the need for the Western Industrial Equipment Exposition will never bring it into existence. What is needed is creative action, now, which will have conceptional imagination and bold initiation to put this project into effect.

"In order to bring this exposition into existence, it is proposed that a committee be organized. Members are to represent the various segments of the industrial and exhibiting classifications. From this nucleus the embryo will develop into what the Western Plant Operating Executives need—a first class equipment exposition."

That's the spirit! . . . and two show firms have expressed interest in working with a committee to put on such a show.

The next step? . . . It's up to YOU.

Any more comments?...let's hear from you...

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1957

NEW ALLIS-CHALMERS

POWER SHIFT

TORQUE CONVERTER DRIVE

Makes lift truck operation easier than ever before!



SIMPLE FLICK OF A LEVER CHANGES DIRECTION — SMOOTHLY

Just flip lever ahead for forward, back for reverse — with light finger-tip touch. You'll be surprised how fast and smoothly you change directions, without jerking. You work fast, stay fresh, get more done.

ENJOY NEW SAFETY OF OPERATION

Have full control — ALWAYS, with every move forward or reverse made under constant, positive power coupling. No coasting, no dangerous delay between power application and braking.

Brake to stop — merely release pedal to restart. Applying brake pedal, at left of accelerator, does not break power coupling. This saves time and effort stopping and starting.

There's additional safety in two new features: engine will not start while truck is in gear — and POWER SHIFT Drive automatically returns to neutral if operator leaves the seat.

POSITION LOADS QUICKLY, ACCURATELY WITH NEW INCHING CONTROL

Inching pedal lets you move fast or just creep, always under full, positive control. With this you also have full engine power for fast lifting, even while inching.



MULTIPLY WORK CAPACITY, INCREASE GRADABILITY WITH TORQUE CONVERTER DRIVE

The torque converter, on all Allis-Chalmers trucks with POWER SHIFT Drive, automatically matches power to load, multiplies working ability, increases gradability.

SIMPLICITY, RELIABILITY, TOO POWER SHIFT Drive is simple to operate and service — dependable, too.

Get the complete story on how POWER SHIFT saves time, makes driving trucks easier, helps get more done. See your Allis-Chalmers material handling dealer... or write for Bulletin BU-465.



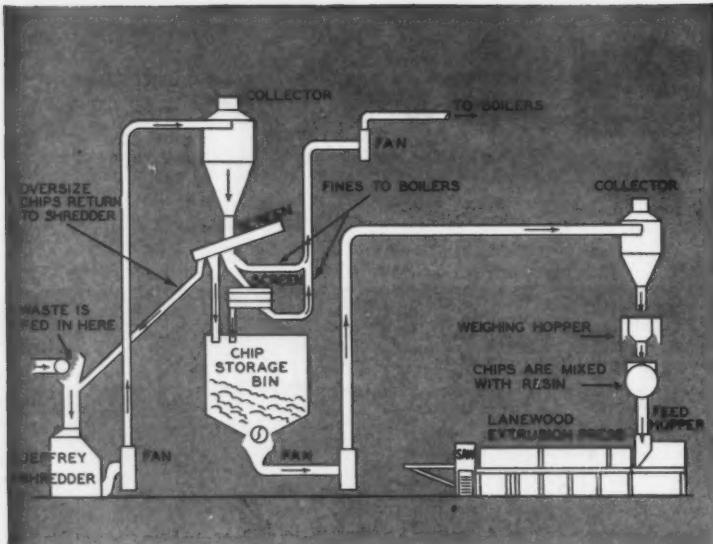
Here's new smoothness of operation — with more speed, less fatigue.

ALLIS-CHALMERS, MATERIAL HANDLING DEPT., BUDA DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



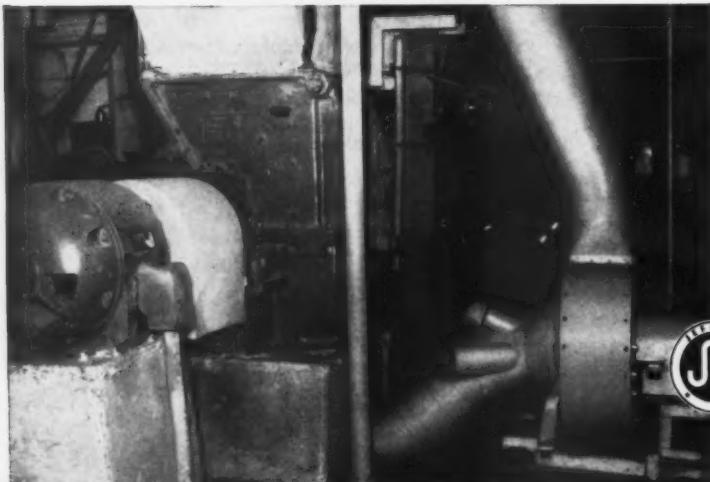
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Schematic layout for particle board production at The Lane Company, Altavista, Virginia.



Wood waste in various sizes, shapes and species is fed into the hopper above the Jeffrey Shredder.



Waste and oversize wood particles are reduced to proper size by this Jeffrey Shredder, then conveyed by air to an overhead collector, screens and storage.

SUITABLY SIZED

WOOD

PARTICLES—

a Jeffrey Shredder
meets this
requirement for

Lanewood **Particle Board**

- Core stock employed in fine furniture by The Lane Company is made of suitably sized wood particles and a thermosetting resin. A proper mixture is forced, under pressure, between heated plates in a continuous extrusion press. There it is compressed and cured. The resulting board is quite economical to produce; it compares with wood in machineability, is uniform in dimension, and has high screw-holding power.

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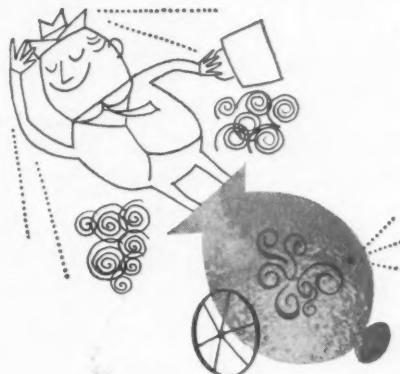


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WESTERN INDUSTRY — November 1957

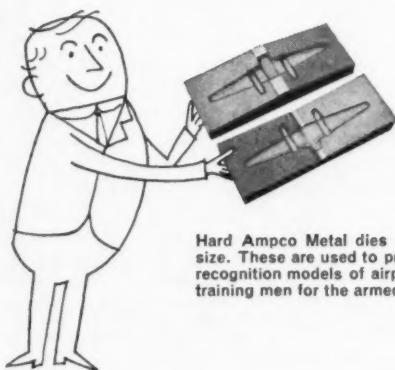
AMPCO can heed . . . your need for speed . . .



with Castings, from ounces . . . to 5,000 pounds



Here's an example:



Hard Ampco Metal dies cast close to size. These are used to produce plastic recognition models of airplanes, aids in training men for the armed services.

D-65

Centrifugal Castings
Sand Castings • Fabrications • Machined Parts

At Ampco in Burbank, all this is just a stone's throw away from you: Engineers and production men with 43 years' know-how behind them. Complete facilities, including pattern and machine shops, for castings in alloys many foundries shy away from—chromium copper, pure copper, and bronzes hard enough for die work.

Send for Bulletin 73W. Address Ampco Metal, Inc., 30 East Burbank Blvd., Burbank, Calif.

Main office and plant,
Milwaukee 46, Wisconsin



Another plant growing in Burbank



AMPCO

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WESTERN MEETINGS

Fact 1

Once in a while a better product is made, and made so well, that it becomes the standard by which all similar products are judged.



Fact 2

The preference that you and millions of other users have shown for the RIDGID Pipe Wrench puts on us the responsibility of keeping it always up to the top quality you expect of it.

The Ridge Tool Company, Elyria, Ohio, U. S. A.
... for more details, circle No. 11 on Reader Service Postcard

18

NEW OFFICERS OF THE SOUTHERN CALIFORNIA SECTION, American Society of Mechanical Engineers, were elected recently. Chairman is **Shuman H. Moore**, Foster Wheeler Corp.

Other new officers elected are: **George Hallen**, Franklin Engineering Co., vice chairman; **Henry O. Fuchs**, Metal Improvement Co., secretary; **Edward E. Forslund**, Falk Corp., treasurer. **Frank J. Donnelly**, Fluor Corp., Ltd., has been named membership development chairman and **Hans H. Sonderling**, Department of Water and Power, has been named program chairman.

THE GAS APPLIANCE MANUFACTURERS SECTION of the Pacific Gas Association elected 1958 officers who will serve as heads of various divisions within the manufacturing section, announces **Paul H. Hammond**, Pasadena, general chairman of the section.

J. J. Delaney, Reliance Regulator Co., vice chairman, manufacturers' section; **A. W. Beck**, Robertshaw-Fulton Controls Co., chairman, accessories division; **Walter Lee**, vice chairman, accessories division; **Henry Honer**, Standard Enameling & Equipment Co., chairman, gas range division; **Frank Breckenridge**, O'Keefe & Merritt Co., vice chairman, gas range division; **Stanley Skafte**, Utility Appliance Corp., chairman, heating division; **Arthur J. Horn**, Day & Night Manufacturing Co., vice chairman (south), heating division; **Glenn Barnes**, Sequoia Manufacturing Co., vice chairman (north), heating division; **J. R. Van Curen**, Sequoia Manufacturing Co., chairman, water heater division; **C. R. Lombardo**, Hoyt Heater Co., vice chairman, water heater division.

Hammond and **Delaney** were appointed delegates to the Gas Appliance Manufacturers Association.

"EXECUTIVE DEVELOPMENT" will be the topic of a panel at the November meeting of the Los Angeles chapter of the Society for the Advancement of Management. The meeting will be held at 6:30 p.m., Nov. 21, at the Rodger Young auditorium.

Panel members will be: **Charles Bogenrief**, department head, Robertshaw-Fulton Co. (Moderator); **H. V. Harris**, assistant vice-president, Pacific Telephone and Telegraph Co.; **H. L. Samuelson**, manager of executive development, Pacific Telephone and Telegraph Co.; and **L. O. Stockford**, corporate advisor, Lockheed Aircraft Co.

WESTERN

MEETINGS

YOU

SHOULD

PLAN

TO ATTEND

Nov. 13-15—EIGHTH NATIONAL CONFERENCE ON STANDARDS. First meeting on West Coast. St. Francis Hotel, San Francisco. For further information write to H. Thomas Hallowell, Jr., Standard Pressed Steel Co., Jenkinsburg, Pa.

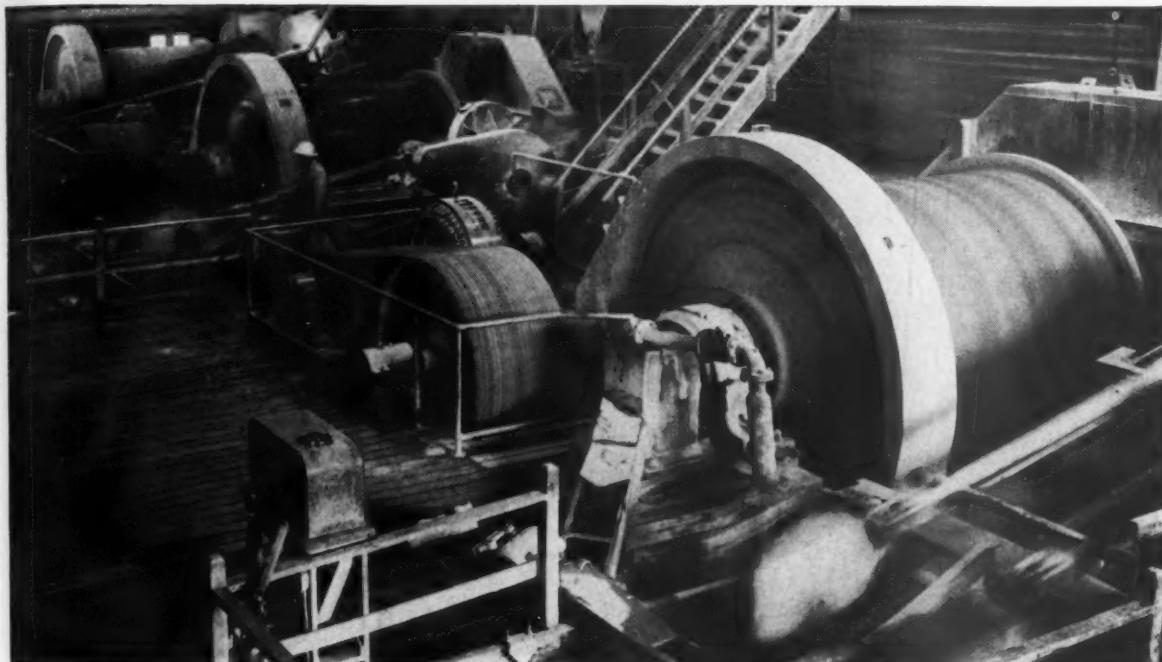
DEC. 2-3—WEST COAST NOISE SYMPOSIUM, Huntington-Sheraton Hotel in Pasadena. Theme will be "Industrial Noise: Its Hazards, Costs and Control." Requests for information or registration should be addressed to University of California Extension, Engineering, Los Angeles. (GRanite 3-0971, station 677).

... concluded on page 24

STANDARD ENGINEER'S FIELD REPORT

PRODUCT CHEVRON GEAR COMPOUND
FIRM BAGDAD COPPER CORP.
Bagdad, Arizona

Not one gear failure using Chevron Gear Compound



During 5 years that Bagdad Copper Corp. has used Chevron Gear Compound (formerly Calol) in its ore concentrator mill, not a single gear has broken down, required repair or replacement as a result of

lubricant failure. Despite continuous operation and extreme pressure, gear teeth show no scuffing or galling. Mill moves some 4,000 tons of ore through its four ball mills and classifiers every 24 hours.



Enclosed gears of firm's four classifiers are lubricated with Chevron Gear Compound. Copper ore is pulverized in ball mills by tumbling with 32 tons of 3" steel balls. Classifiers then screen out oversize pieces for return to ball mills. Reduction gear box which Master Mechanic Al Smith is inspecting (above) powers connecting arms which agitate mixture of pulverized ore and water in classifier.

Why Chevron Gear Compound protects enclosed gears



- Tough film protects gear teeth against scuffing and scoring under severe shock, load conditions.
- Highly adhesive...clings to gear teeth and bearings, even under wet operating conditions.
- Oiliness additive reduces friction

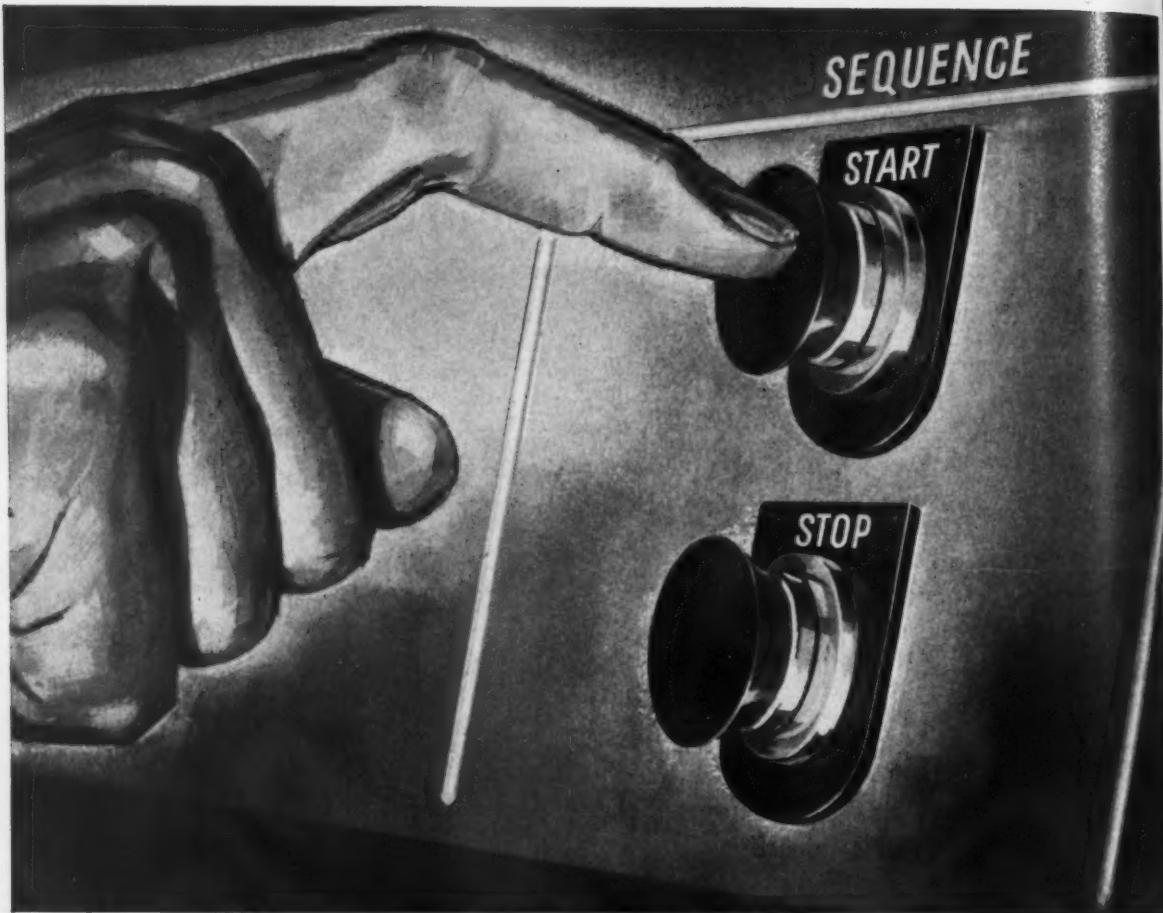
For More Information on this or any other petroleum product contact your Standard Engineer or representative, or write 225 Bush Street, San Francisco 20, California.



*TRADEMARK "CHEVRON" AND "CHEVRON" DESIGN REG. U.S. PAT. OFF.

STANDARD OIL COMPANY OF CALIFORNIA

... for more details, circle No. 12 on Reader Service Postcard



Got a job for the Batchetron?

Here's what it will do. Operating electronically from a remote control station, the Fairbanks-Morse Batchetron can be preset with knobs and buttons to assemble accurate quantities of dry and liquid components from any one or more bins or tanks. The cycle of mix is also preset, and the actual batching takes place at the touch of a button.

Which of these features will improve your batching operation? Do you want remote control—for instance, batching from an air-conditioned office? Do you want the fast programming feature—for the occasional single batch from a different formula? Do you want the automatic cycling—that will duplicate the batch again and again at the touch of a button?

The Batchetron is . . . Fairbanks-Morse electronics instrumentation plus accurate weighing in the Fairbanks-Morse tradition. There is a new bulletin, No. ED-14, on the Batchetron with many suggested applications which may fit your process operations. Send for it today. Fairbanks, Morse & Co., Dept. WI 11, South Michigan Ave., Chicago 5, Illinois.



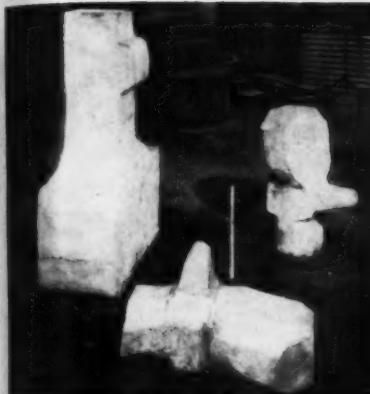
Batchetron control console.



FAIRBANKS-MORSE

a name worth remembering when you want the **BEST**

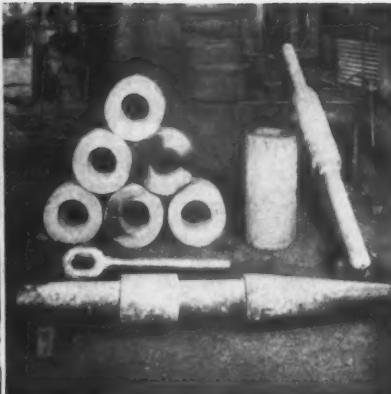
SCALES • PUMPS • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • MAGNETOS
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Aircraft quality forgings



Miscellaneous commercial



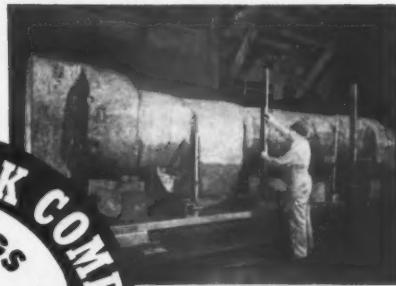
Sleeves, shafts, and spindles

Serving the Leaders in Metalworking . . .

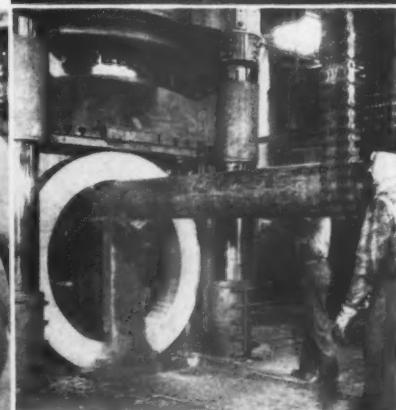
QUALITY FORGINGS by Moore Dry Dock

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Flat die hammers with 800 to 6,000 lb. capacity and presses to 1,500 tons can produce a wide range of stronger, neater forgings to suit your particular requirements. Complete, modern equipment for heat treating, machining, and testing provides full "one shop" service and responsibility, speeds your job. Let us estimate your next outside work.



Steel mill eccentric shaft
53' long.
18" dia. propeller shaft



Large mandrelled ring

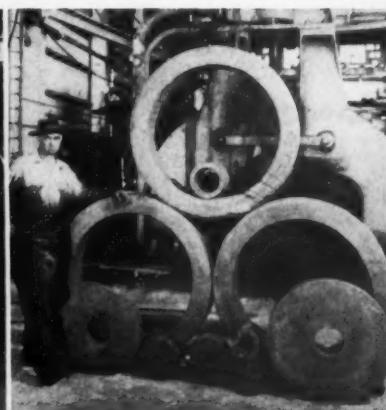


Crane hooks

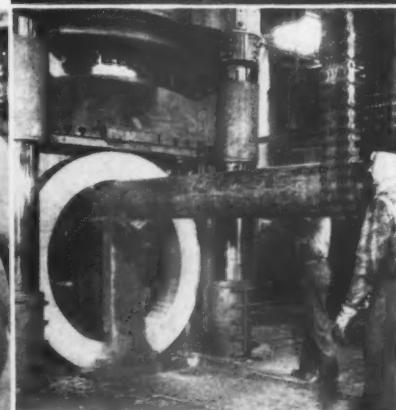
Southern California Representative

**SHULTZ STEEL
COMPANY**

5321 Firestone Blvd., Southgate
LORain 4-3281



Ring and gear blanks



Foot of
Adeline St.,
Oakland 23,
California
Higate 4-3919



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How
DENISON
 hydraulic power
 works for
LOGEMANN
BROTHERS
CO.

Putting more squeeze in presses

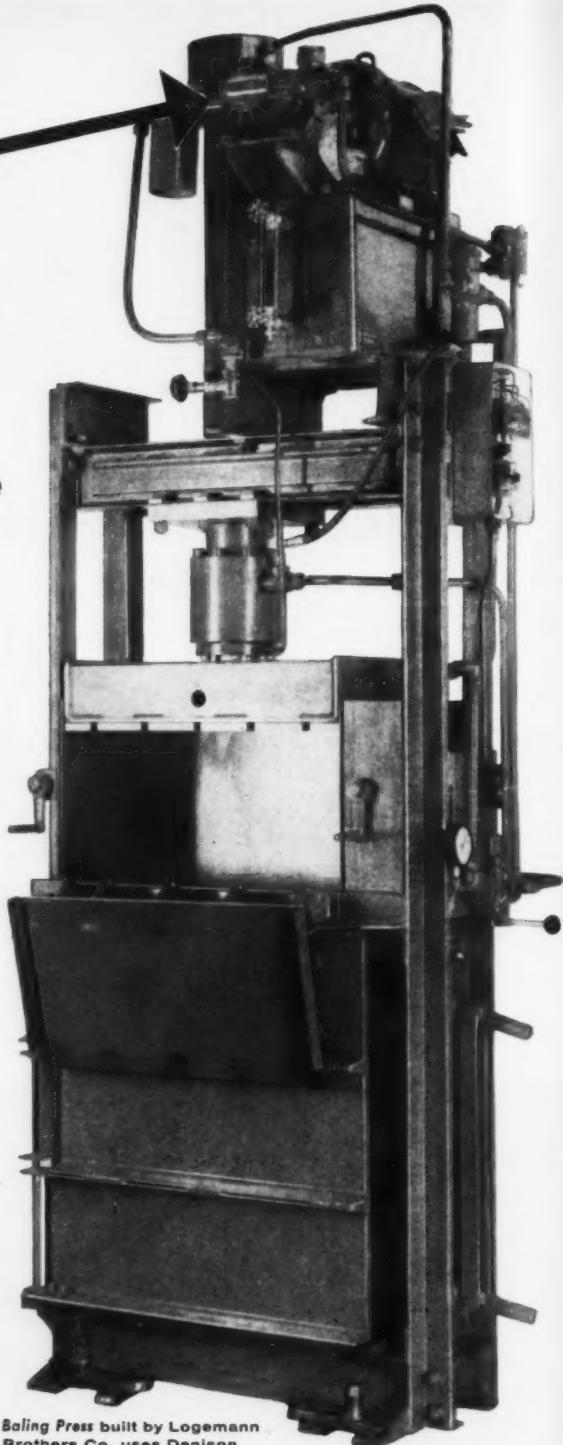
*...another application for Denison
 hydraulic power*

Here's how a leading manufacturer of baling presses assures peak performance for his product . . . combines it with dependability for long, continuous service.

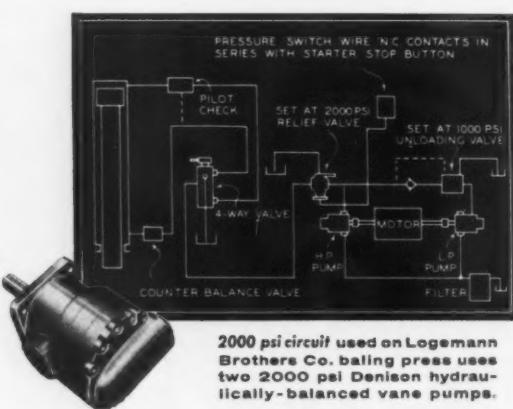
Power and speed of operation are achieved by the use of two 2000 psi Denison TMC balanced-vane hydraulic pumps. One Denison pump is set for 1000 psi for fast ram approach. The second pump is set for 2000 psi to provide necessary pressure for the power stroke.

By using identical 2000 psi pumps, maintenance is simplified and pump life greatly increased.

Endless design problems can be solved by using Denison hydraulic equipment on systems up to 5000 psi. Your Denison representative (who is an experienced hydraulic specialist) will gladly show you how. Write us: Denison Engineering Division, American Brake Shoe Co., 1184 Dublin Road, Columbus 16, Ohio.



Baling Press built by Logemann Brothers Co. uses Denison pumps and valves for 2000 psi hydraulic system.



HYDRAULIC PRESSES • PUMPS • MOTORS • CONTROLS

Denison and Denison HydroOils are registered trademarks of Denison Eng. Div., ABSCO

DENISON
HydroOils

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 WESTERN INDUSTRY — November 1957

WESTERN MEETINGS

continued from
page 18

1958

Feb. 6-7—GOVERNOR'S INDUSTRIAL SAFETY CONFERENCE, eighth annual California state-wide meeting, Fairmont Hotel, San Francisco. Further information may be obtained from H. A. Hartman, staff consultant, manufacturing section, 965 Mission Street, San Francisco, Calif.

March 17-21—NATIONAL ASSOCIATION OF CORROSION ENGINEERS, 14th annual conference, San Francisco. Contact A. B. Campbell, executive secretary, 1061 M & M Building, Houston 2, Texas.

March 27-29—ELECTRICAL MAINTENANCE CONFERENCE, combined show and conference, at the Shrine Exposition Hall, Los Angeles. Emphasis on automation and electronics. For further information contact Fred J. Tabery, 3443 So. Hill Street, Los Angeles.

April 12-17—AMERICAN CHEMICAL SOCIETY, California section will sponsor third Pacific Chemical Exposition in San Francisco. For further information contact Connolly & Leopold, exposition management, Hotel Sherman-McAlpin, New York 1, N. Y.

May 7-11—WESTERN AIR CONDITIONING INDUSTRIES ASSOCIATION CONFERENCE AND EXHIBIT, second meeting. Scheduled for the Shrine Exposition Hall, Los Angeles. Contact Fred J. Tabery, 3443 So. Hill St., Los Angeles 7, Calif.

Introducing . . . Our new Northwest Editor

This is A. B. "Blake" Jackson, who takes over this month as our Northwest Editor. Blake will be meeting and talking to you folks in Washington, Oregon, Idaho, and Montana . . . and your news and stories will be featured prominently in each issue of WESTERN INDUSTRY. You can rely on Blake to have your best interests at heart, because he has lived and worked in the Northwest since 1932. And besides possessing a sound technical and engineering background, Blake has published the *Esco Ladle*, (Electric Steel Foundry Co.) one of the country's outstanding industrial house organs; and he was most recently editor of *Construction World*, U. S. edition. So . . . watch for the latest industrial developments from the Pacific Northwest, by-lined by Blake Jackson. For a starter, read Blake's article on an exciting process in action at the Oregon Metallurgical Corporation in Albany, Oregon. The article is on page 44.



Blake Jackson

ACME
CHAINS
Deliver Positive
Power Transmission



ACME Roller Chains are designed and engineered to perform each specific job with maximum efficiency and economy. Sprocket ratio, chain impact, tension, drive speed and other factors are determined, not on the drawing board alone, but in the field where ACME engineers observe and test chains at work while new equipment is being designed. In that way, ACME Chains are made to deliver positive power transmission with economy and dependability under all loads at all times.

Write or telephone Holyoke JE 2-9458, your inquiry requesting information or ACME engineering assistance.



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TUBING PERFORMANCE and WORKABILITY BEGIN with the MELTING OF STEEL

Tensile strength, corrosion resistance, resistance to "creep" at elevated temperatures and reaction to heat treatment are only a few of the mechanical and physical characteristics of a steel which are controlled by chemical composition. In addition to analysis, "melting practice" controls such factors as the cleanliness of the steel, its grain size and its hot workability.

Chuck Connor, melter and Bob Schriner, first helper are shown making "additions" during the melting of a heat of alloy steel in one of B&W's electric melting furnaces. They know that what they add, and when and how they add it during the melting cycle helps make B&W Seamless Tubing easier for you to fabricate and gives the tubing optimum service life.

Years of experience and attention to detail and the

coordinated efforts of the entire team of B&W technicians, furnace operators, metallurgists, engineers and chemists help make the name "B&W" the hallmark of tubing quality. The Babcock & Wilcox Company, Tubular Products Division, Beaver Falls, Pa.



TA 6050-G5

Seamless and welded tubular products, seamless welding fittings and forged steel flanges—in carbon, alloy and stainless steels.

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IMMEDIATE DELIVERY TO WESTERN INDUSTRIES of TIME and COST SAVING

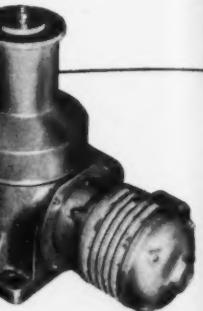


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CAR PULLERS & SPOTTERS

744-45° TROUGHING CARRIERS

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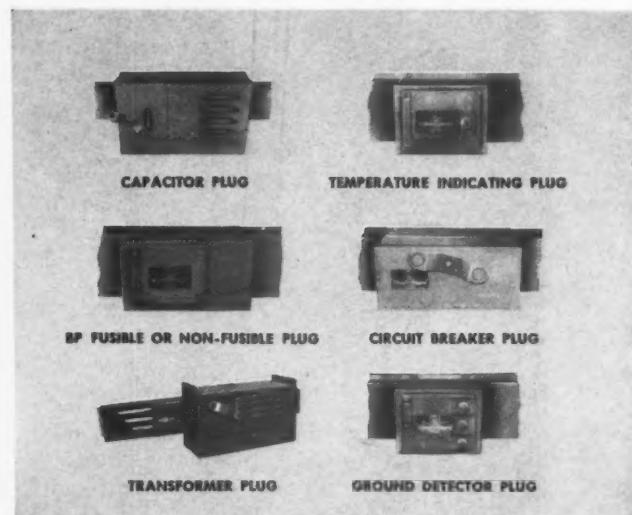
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WESTERN INDUSTRY — November 1957

For more details, adv. opp. pg., circle No. 20 on Reader Service Postcard ➤



The Vacu-Break® Plug (above) taps live power, is available in 30 to 600 amps, 2 or 3 pole, 600 volts or less. Reinforced fingers on all plugs insure positive pressure contact.



All BullDog Bus Plugs mount on either side of the duct easily, quickly . . . eliminate rewiring and downtime. Types available for every purpose.

Seven rugged Bus Plugs provide flexible plug-in power

Get the most from your power with BullDog Bus Plugs. Used with Plug-in Duct, the seven bus plugs range from safety-check plugs to types that tap power instantly from the duct . . . provide safe, flexible electrical distribution.

Plug-in openings are spaced every 10 inches along the duct. Handy to any machine, they reduce long costly branch-circuit runs. You simply plug in circuits where you need them . . . relocate or add machines without cutting off power, without interrupting production.

Learn how a co-ordinated BullDog distribution system, from bus plugs to unit substations, provides efficiency and flexibility that mean economical expansion. See your electrical contractor or BullDog field engineer for complete details.

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BullDog Electric Products Company, Detroit 32, Michigan. • A Division of I-T-E Circuit Breaker Company • Export Division: 13 East 40th St., New York 16, New York. In Canada: BullDog Electric Products Company (Canada), Ltd., 80 Clayton Rd., Toronto 15, Ontario.



IF IT'S NEW . . . IF IT'S DIFFERENT . . . IF IT'S BETTER . . . IT'S

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How P. G. and E. shed new light on an old problem



As carpets come off tufter machine, a 300 footcandle bank of light permits man with portable stitcher to make final inspection and repairs right on the production line.

"A stitch in time..."

It all started with a 'phone call... to a P. G. and E. Illuminating Engineer. Berven Rug Mills, Inc., Fresno, was on the other end of the line asking for advice for increasing the efficiency and accuracy of their inspection method. P. G. and E. quickly conducted a free survey and came up with this solution. Intensify the lighting in the inspection tents (10 times... to 300 footcandles) and mount the lights as a bank, vertically. Then, as the rugs peel off the tufter machine, an inspector can

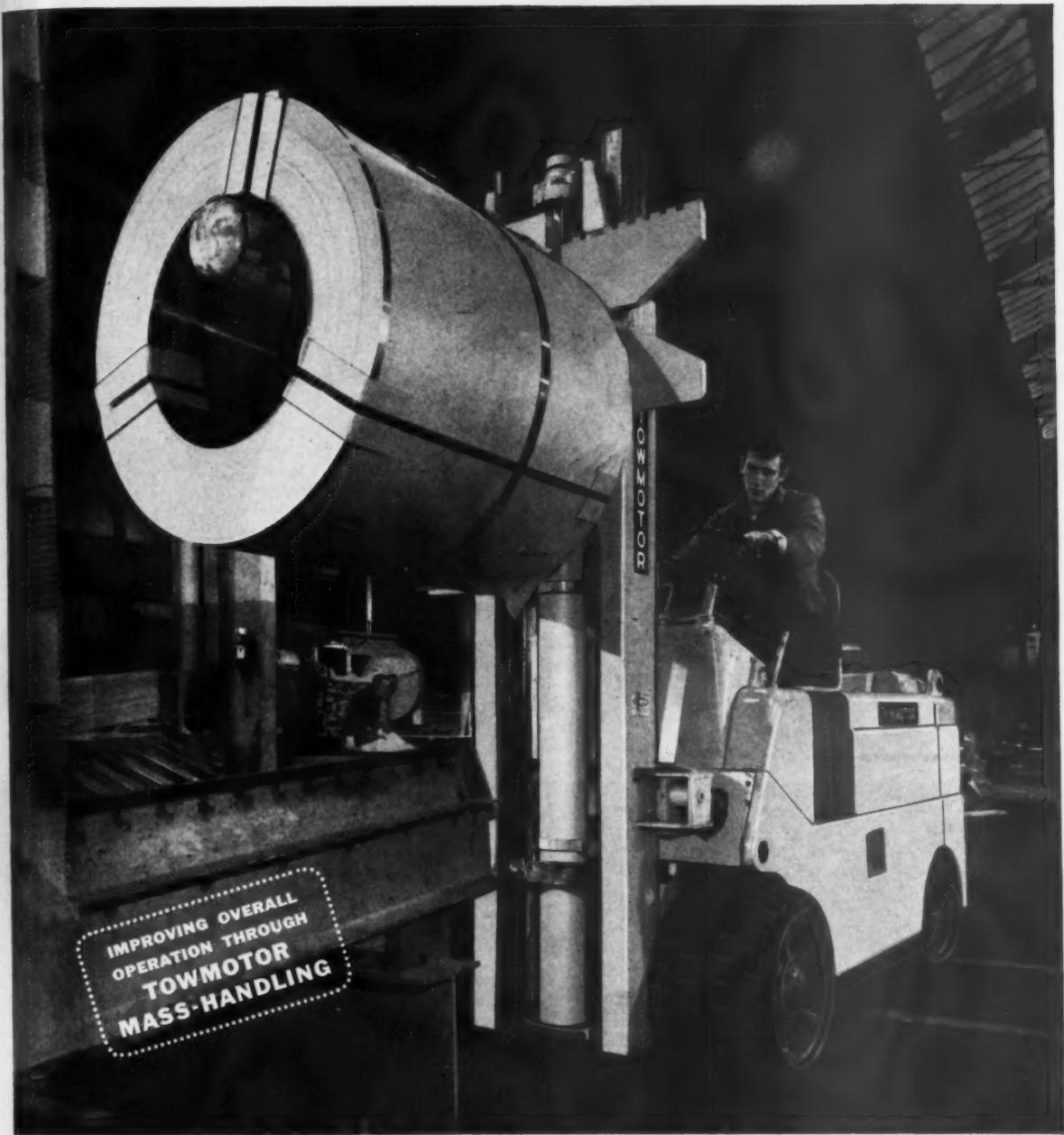
detect "skips" and off-colors with much greater speed and accuracy.

Mr. Joseph Kay, Manager of Berven Rug Mills, testifies to the value of P. G. and E.'s free help. "We are producing a greater quantity with a better quality as a result of P.G. and E.'s lighting advice." Perhaps P.G. and E. can shed some light on your problems. A free P.G. and E. lighting survey is the best way to find out. Call your nearest Pacific Gas and Electric Company office today.

P·G and E.

Pacific Gas and Electric Company

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WESTERN INDUSTRY — November 1957



...here's "manpower" that hands you a bonus!

Think how many of your plant's handling jobs can be accomplished with much less effort—swiftly and profitably—by one operator "teamed up" with a powerful Towmotor fork lift truck!

You get an entirely new concept of modern mass-handling. You get a "bonus" in extra profits because you multiply manpower with the payroll you have. And you get a bonus in plant-wide morale when work flows on-schedule through every department . . . effortlessly . . . with a bigger day's work done.

Called the "ideal" fork lift truck by management and operators alike, the latest Towmotor models offer exclusive features as advanced as these, at no extra cost:

- New-concept functional engineering
- Simplified dual-entry compartment
- Full-traction weight distribution

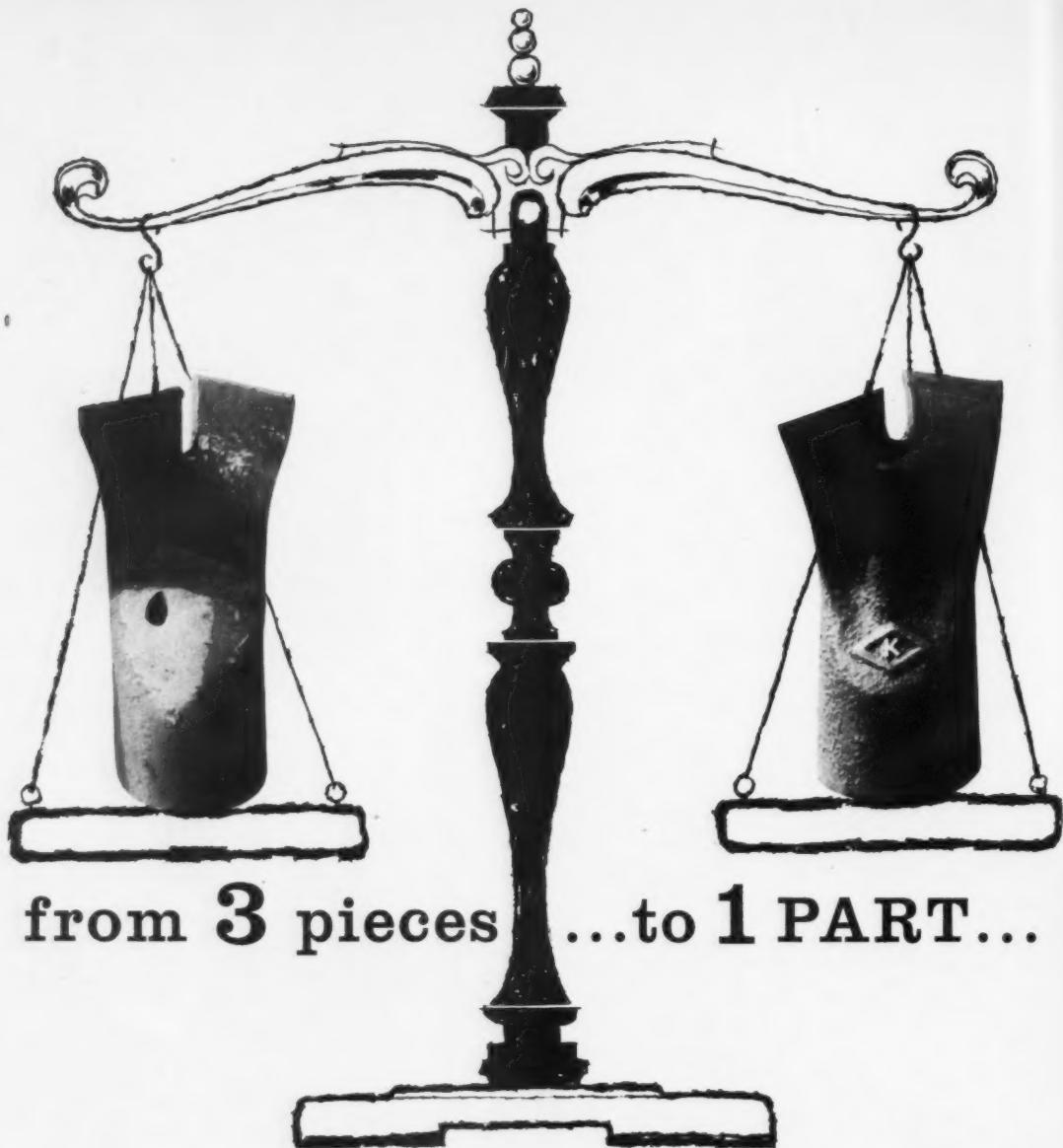
- Adjustable off-center visibility
- New motion-studied centralized control
- Towmotor improved precision steering Power steering, 'TowmoTorque' Drive at extra cost These and 60 other points of superiority are described in Towmotor booklet SP-23 for comparison. Get a copy from Towmotor Corporation, Cleveland 10, Ohio.

**Leaders for 38 years
in building Fork Lift
Trucks and Tractors**

TOWMOTOR -GERLINGER
THE ONE-MAN-GANG

Gerlinger Carrier Co., Dallas, Oregon, is a subsidiary of Towmotor Corporation, Cleveland, Ohio

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from 3 pieces ...to 1 PART...

by casting in steel... Casting this fishtail reamer bit in steel cut its manufacturing costs. Designing for a steel casting allowed moving the circulating hole from the side to the center of the cutters increasing its efficiency. Casting in steel permits flexibility in design, offers a wide range of carbon and alloy steels, streamlines designs, gives added eye and sales appeal to your product. Maybe your parts can be cast in steel. There is a wide range of physical properties from which to choose. We'll be glad to talk it over and give you cost estimates at no charge.

Steel castings from a fraction of a pound to thousands of pounds.

Call us! CUMBERLAND 3-2141



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999 SOUTH MERIDIAN AVENUE, ALHAMBRA, CALIFORNIA

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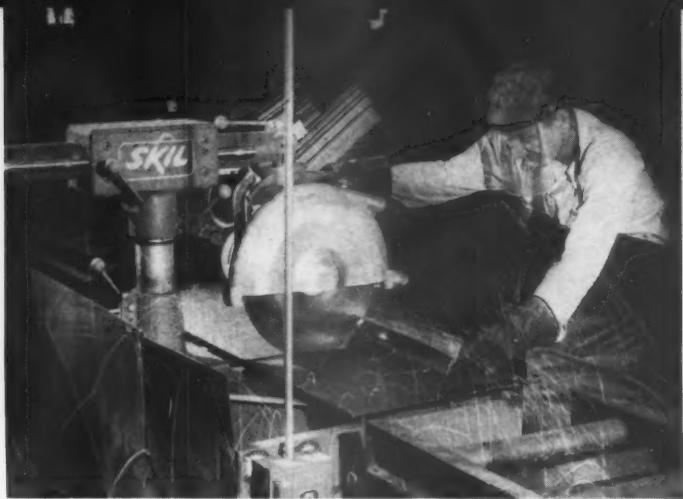
WESTERN INDUSTRY — November 1957

For more details, adv. opp. pg., circle No. 24 on Reader Service Postcard ➤



Saves 30% time

The Columbus Heating & Ventilating Co., Columbus, Ohio, owns an all-around inventory of SKIL tools. The reason: practically no maintenance, light-weight, better balance, adaptability. Mr. Clarence Fine, shop foreman, singled out the SKIL Model 825 Disc Sander as a tool that stands up under continuous operation. "In addition", says Mr. Fine, "it's 30% faster than anything else we've tried."



Saves 8 hours labor costs a week

Five years ago, Trailmobile, Inc., Cincinnati, bought a SKIL Model 450 Radial Saw. Since that time four more such saws have been added with these results: "Each one saves us one 8 hour day labor costs per week", says Mr. Herman Suter, portable tool supervisor. "We have eliminated the sanding operation of rough edges caused by a cutting torch."

It's true! You **SAVE** with SKIL Tools



Saves \$100.00 per week

"Our new SKIL Shear paid for itself in the first week", says J. M. McLain, owner of J. M. McLain & Sons Trailer Company, Houston. "In using other makes of shears we found that maintenance costs were about to run us out of business. Some operations were cut from 30 minutes to 1½ minutes. My men like SKIL shears because they are easier to handle, adaptable, and are cheaper to run."



YOU, TOO, CAN SAVE

NEW! SKIL 7" Model 852 Disc Sander. Save time and effort on the toughest sanding, wire brushing, grinding. New, powerful motor stands up under the heaviest work load. No matter what you have to sand, grind, saw or drill, there's a SKIL tool that can do the job better, faster, cheaper. Ask your SKIL distributor to show you why. Or use the coupon below for further information.

SKIL
PORTABLE TOOLS

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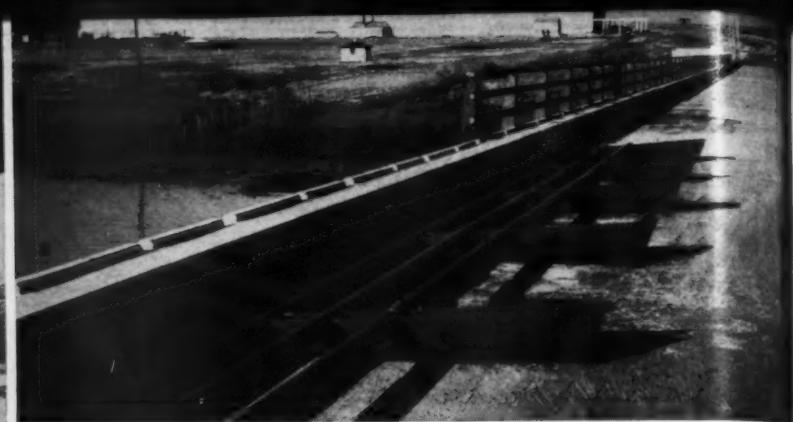
City _____ Zone _____ State _____



c



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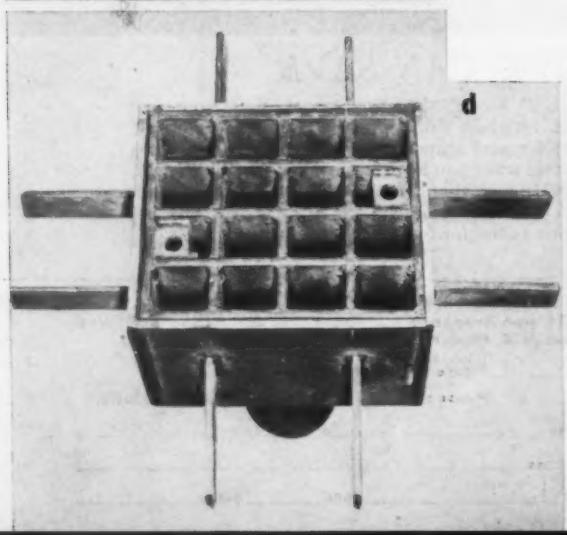
Wrought Iron's corrosion resistance and easy workability earn top priority in these highway applications

- a** Wrought Iron railings offer high impact resistance because of their great structural strength. Easy to work and easy to weld, wrought iron railings stand up well in corrosive atmospheres.
- b** Wrought Iron drainage lines assure uninterrupted service—so essential in keeping high speed traffic lanes open. No costly maintenance or repairs with this durable piping material on the job.
- c** Wrought Iron snow melting systems like the one on this bridge ramp, combine corrosion resistance with rugged strength, low coefficient of expansion with concrete, and easy fabrication properties.
- d** Wrought Iron scuppers serve as low-cost catch basins in bridge drainage systems. Cindering and salting and alternating wet and dry conditions have proved relatively harmless to this rugged material.
- e** Wrought Iron curbing preserves concrete against icing salts, brine slush, drainage water and corrosive atmosphere. Wrought iron's resistance to corrosion stems from a unique structure of glasslike iron silicate fibers. Write for booklet, *Wrought Iron for Highway Construction*. A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.

BYERS Wrought Iron Tubular and Hot Rolled Products

ALSO ELECTRIC FURNACE QUALITY STEEL PRODUCTS

Corrosion costs you more than Wrought Iron



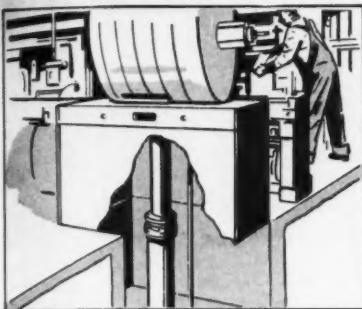
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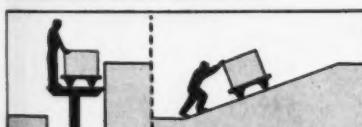
RAISE AND LOWER HEAVY LOADS AUTOMATICALLY TO SPEED AND IMPROVE PRODUCTION

LOAD AND UNLOAD MACHINES QUICKLY



Machines that are fed material in bulk quantities . . . or fabricate large and heavy end products . . . utilize hydraulic platform lifts to speed charging and discharging. Globe OiLIFTS, used in these installations, reduce manual effort and portable machine handling, lower costs and speed the operation safely.

ELIMINATE HAZARDOUS RAMPS



Space consuming, dangerous and laboriously traveled ramps between two floor levels are eliminated by Globe OiLIFTS. Materials move on the level, from one area to another, risk of damage or accident is lessened, space and time are saved.

GLOBE[®]
OiLIFT

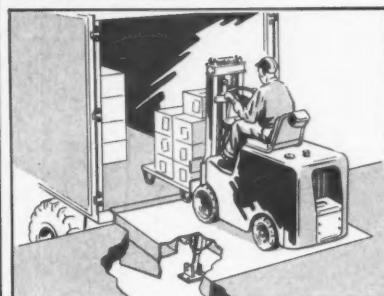
PLANTS: DES MOINES-PHILADELPHIA-LONG BEACH, CAL.



GET YOUR
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COPY
TODAY!



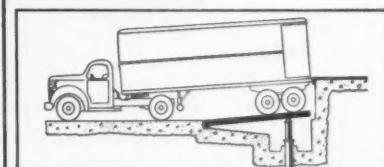
TRANS-O-MATIC RAMP SMOOHS TRAFFIC



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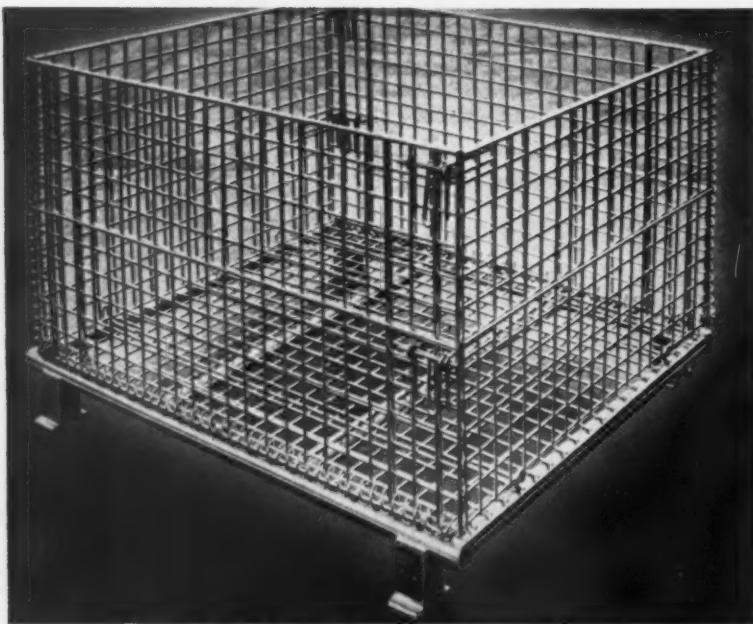
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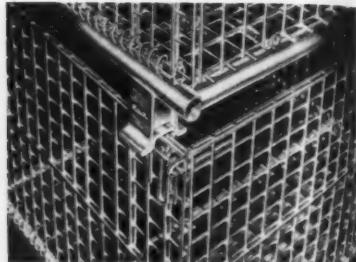
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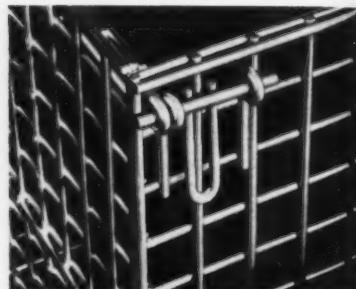
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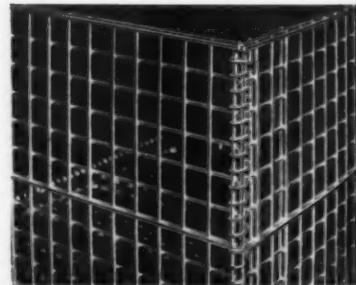
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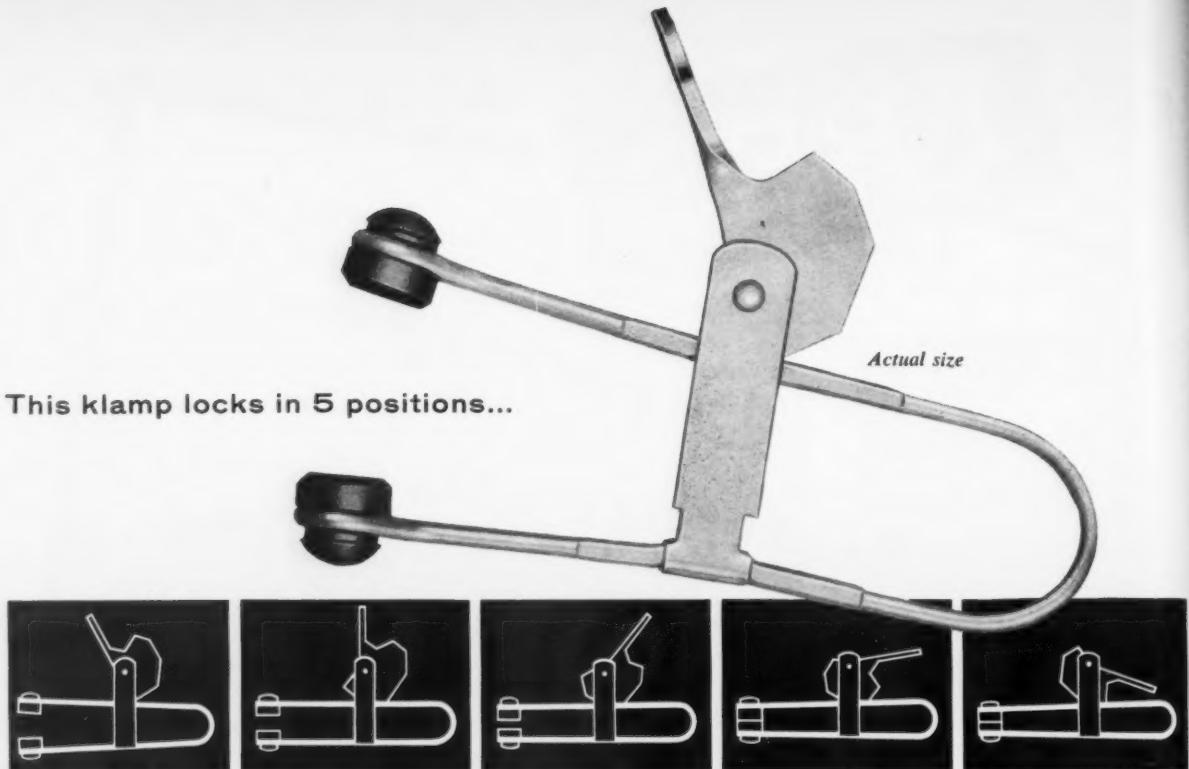
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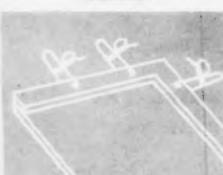
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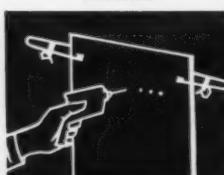
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WESTERN INDUSTRY — November 1957

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Industry gets tons of oxygen ...with no capital investment

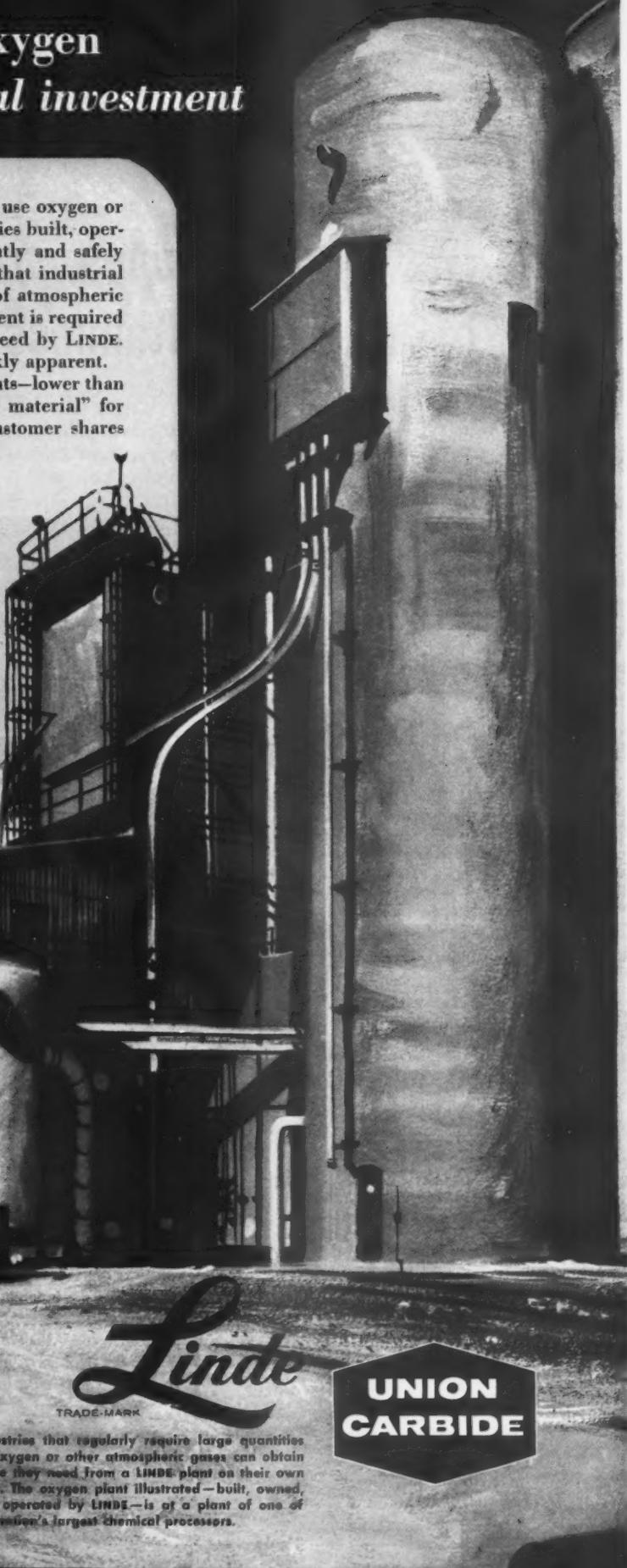
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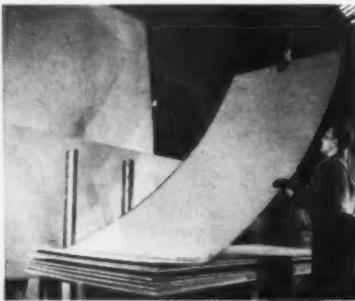
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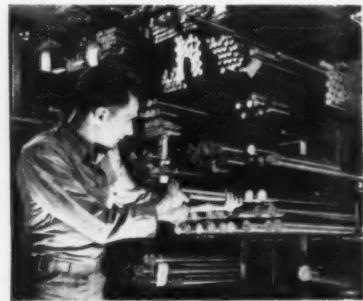
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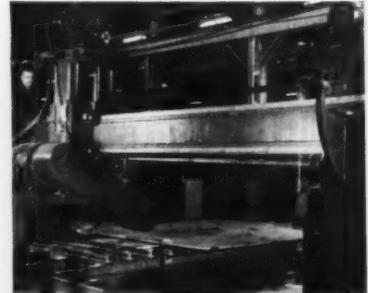
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UP WITH QUALITY

down with rejects!

You can cure the headaches of defective parts and bad workmanship by finding out the cause . . . then applying direct and indirect methods of correction. Here's how:

AUTHOR

**ALFRED R.
SADEWIC**

Bingham Pump Co.
Portland, Ore.



"**Q**UALITY CANNOT BE INSPECTED into a product, it must be built in," is a statement often quoted by top management to its staff and line supervisors.

However, before making this statement, management should be aware of all the reasons that lead to the making of defective parts . . . and once having the facts, it should consider whether staff and line supervisors have been provided with constructive ideas or methods as to how, as a cooperative team, quality can be built into a product—effectively and economically.

A study was made at a company which manufactures automatic presses, and various types of specialized machinery, employing a job-shop technique of processing the equipment. The equipment is manufactured in job lots ranging from one to ten; the average lot is two. Component machine parts may range from one piece part to as high as several hundred; parts made in large quantities are generally small units requiring only simple machining.

The company has 290 employees, of which 150 are direct labor both in the machine shop and assembly department. The average age of the machine shop employees is 41; length of service is 16 years. The inspection force consists of 11 employees.

Individual parts are routed through various machine tool centers by an

operation sheet. It contains detailed instructions and a blueprint of the piece part. The machinist is assigned

an operation sheet by his departmental foreman. When finished with the first piece part, the operator takes it to

Table 1. Summary Table of Scrap and Salvage Frequencies Caused Through Operator Negligence.

Item	Classification of Occurrences	Scrap Frequency	Salvage Frequency	Combined Percentage of Total Frequencies
1.	Operator's personal judgment or "Chance Factor."	285	371	25.90%
2.	Operator manipulation error.	59	54	4.46%
3.	Mis-read drawing.	76	16	3.63%
4.	No visual check of cutting tools.	48	15	2.48%
5.	Piece part not secured properly.	36	13	1.97%
6.	Layout in error.	22	17	1.54%
7.	Improper use of jigs and fixtures.	27	4	1.26%
8.	Machined surface finish not as specified per print.	14	10	0.95%
9.	Inspection error.	11	13	0.95%
10.	Assembly, or filing error.	16	6	0.87%
11.	Mis-reading micrometer or machine graduated dials.	12	4	0.84%
12.	Mis-read, or did not read operation sheet.	2	3	0.19%
13.	Parts damaged during stamping the piece part identification number.	5	—	0.19%
14.	Operator used the wrong drawing.	4	—	0.16%

the process inspector for approval to proceed with the remaining parts.

The study was conducted for 12 months. Every part that did not conform to acceptable print specification standards, and was either scrapped or salvaged (minor additional reworking necessary to make the piece part conform to print specifications) has an individual scrap or salvage report prepared.

This report listed why the piece part was rejected. The report was then forwarded to the supervisor's department responsible for the error, and he, the supervisor, would consult with the individual responsible as to why or how the error occurred.

The supervisor would then list on this report why, in his opinion, this error occurred. The original comment was analyzed in conjunction with the supervisor's comments. If both reasons for the occurrence of the defect concurred, the fault was recorded. If there was disagreement, then a further analysis was made until agreement as to the cause was reached.

During this study 2,532 reports were analyzed. In the 12-month period, the company incurred a scrap loss of \$19,155.12 and a salvage repair charge of \$12,232.59. The accounting department tabulated these losses by using a variable rate of \$5.04 per labor hour loss.

On these pages are tabulations of scrap and salvage frequencies caused through operator and supervisor negligence. I might note that the monthly frequency rate did rise slightly during summer months and holiday periods.

This analysis was concerned primarily with the frequency of occurrences rather than the dollar cost tabulation of salvage and scrap charges. In a jobbing shop, a single act of carelessness, one occurrence, can result in an extremely high dollar loss. For this reason, an equal valuation has been given to each occurrence of an error.

The ultimate objective is to reduce, or minimize, the frequencies of these errors in each one of the classifications specified. Therefore, management should direct its attention to two major areas in an endeavor to improve quality and reduce cost. These areas are (1) plant employees; (2) supervisory personnel.

In this shop, which is typical of the machine tool industry, it was found that many factors were competing with *quality* for the machine operator's attention. The most serious contender was: *stress on quantity instead of quality*.

Then, in analyzing the frequency

among machine shop operators, it was found that 66% of employees had 4 or less occurrences of scrap or salvage for the 12-month period studied.

This group was responsible for 21% of the total scrap and salvage in the machine shop. The other 34% had 5 or more occurrences of scrap and salvage, and were responsible for 79% of all errors created among shop employees.

It is the latter group that super-

visors should be principally concerned with because not only are they primarily responsible for the majority of shop errors, but they have a low efficiency rating.

Supervisors should make a serious attempt to fully analyze each error so that fundamental reasons are uncovered. Was the error due to an operator's physical handicap? Poor lighting? etc.?

This type of conscientious follow-concluded on page 53

Table 2. Summary Table of Scrap and Salvage Frequencies Caused Through Supervision Negligence.

Item	Classification of Occurrences	Scrap Frequency	Salvage Frequency	Combined Percentage of Total Frequencies
1.	Blowholes, cracks and inclusions in castings	266	116	15.08%
2.	Castings distorted or bosses shifted.	103	140	9.59%
3.	Machining errors beyond the operator's control.	93	108	7.93%
4.	Engineering errors.	31	102	5.25%
5.	Sub-standard purchase parts.	59	18	3.04%
6.	Parts damaged while in shop transit.	48	11	2.33%
7.	Sub-contract work defective.	32	25	2.25%
8.	Defective bar and flat stock.	38	10	1.89%
9.	Material or semi-finished parts "Lost" in the shop.	36	—	1.42%
10.	Fixtures or jigs are sub-standard.	14	15	1.14%
11.	Machine tools sub-standard	19	6	0.99%
12.	Operation routing sheets in error.	9	4	0.51%
13.	Parts distorted in heat treat.	2	11	0.51%
14.	Parts purchased in error.	7	5	0.47%
15.	Wrong raw material delivered to operator for machining.	8	4	0.47%
16.	Salvage weld too hard for machining.	1	11	0.47%
17.	Tool design error.	5	4	0.35%
18.	Parts not hardened to print specifications due to material substitution.	2	4	0.24%
19.	Parts cracked in heat treat.	4	—	0.16%
20.	Drawings not legible.	—	4	0.16%
21.	Parts damaged due to tool breakage or failure.	2	2	0.16%
22.	Improper storage of perishable parts in inventory.	4	—	0.16%
23.	Production Control ordered parts for manufacture in error.	3	—	0.12%
24.	Raw stock oxidized excessively in storage.	1	2	0.12%

Automotive handling speeds production

By an ingenious adaptation of automotive handling equipment this Western firm speeded production 20%.

AN ingenious adaptation of automotive production line equipment has enabled a Western plant to speed production about 20% and to allow for future expansion.

This has been achieved by the use of two overhead conveyor systems in operation at the San Francisco plant of the Tuck-Aire Furnace Co., manufacturer of Atlas and Western furnaces.

One of the conveyor systems has a loop which is approximately 600 ft. long. It is used to move heat exchangers, after they have been completely welded, to an assembly station at a far end of the plant. This system, which holds about 300 hooks, is also used for storage of heat exchangers until they are ready to be placed into furnace assembly.

A second overhead conveyor system, approximately 120 ft. long, conveys finished blowers that have been assembled on a mezzanine to the

main furnace assembly platform on the floor below. This latter system has about 50 hooks.

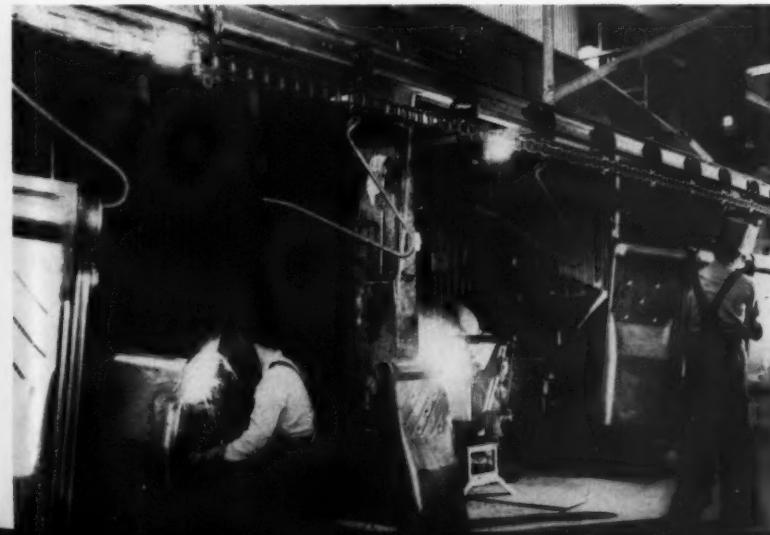
Each hook on the two conveyor systems has a 600-lb. capacity for level travel, and a 300-lb. capacity when going from one floor level to the other. The chain-type conveyor systems are supported from a 4-in. I-beam by suspended double roller bearings. The speed of each system can be adjusted as desired.

The larger system travels at 120 ft. a min. The smaller system has been moving at only 60 ft. a min., but Tuck-Aire production men are planning to set it for double this speed soon, to provide for increased output.

Each overhead conveyor system is powered by a 2-hp. "high-slip" motor of dust- and explosive-proof design.

Actually, the two conveyor systems are ingenious adaptations of automo-

START OF HEAT EXCHANGER LINE: This photo shows arc welding after exchangers have been formed. As soon as each unit is finished, it is placed on moving conveyor for 200 ft. journey.



UNLOADING THE BLOWERS: Tuck-Aire assembly workers take blowers off overhead conveyor line.

tive production line equipment. Part of the system, in fact, was originally used in connection with building engines at an automobile assembly plant.

The two systems took less than a month to build, under the direction of Clarence Graham, Tuck-Aire plant manager. They were designed by the firm's chief engineer, Harold Marble.

Since the two conveyor systems have been in operation for only a short time, it has not been possible thus far to accurately evaluate their overall effect on production.

However, they appear to have more than surpassed the original plan of increasing production volume by approximately 20%, according to Tuck-Aire officials.

The two conveyor systems are expected to facilitate expansion of Tuck-Aire production in the future by eliminating bottlenecks and tie-ups which might have become a problem.

END OF HEAT EXCHANGER LINE: This line can handle 300 pieces at a time. Also used for storage.



Sometimes it pays... to repair it yourself

Here's one answer to the question: should we send out our repair work or do it ourselves? . . .

SHOULD WE SEND out machines for repair or do the work ourselves? This is a question many a Western plant manager has asked himself.

One answer is supplied by the Douglas Aircraft Co., El Segundo, Calif., division, which has upped quality of repair work and saved valuable time by setting up its own repair department.

Backbone of the system is a large file containing over 7,000 folders. The file is kept in the maintenance foreman's office.

Each one of the folders contains a complete operation history on one of the more than 7,000 major machines (machines costing \$1,000 or more) in use at the Douglas El Segundo plant's two major plants.

The data in the files is collected in this way . . . when a new machine is installed, a folder is made up to cover it. The initial entry in the folder contains all pertinent data on the new machine, i.e., its cost, intended use, location, etc. When the machine breaks down and needs repair, a *Machine Repair Card* is made out to cover the job. This card lists the nature of the breakdown, the down-time, the parts required, and all costs. This card eventually finds its way into the folder.

Finally, once each year, each of the more than 7,000 major machines is given a complete and comprehensive inspection. Its general condition and apparent operational efficiency are noted. Worn parts are listed, along with deficiencies in operational ac-

curacy. Obsolescence is recognized and goes into the inspection report. Then, general efficiency and output of the machine is compared with that of newer, more modern equipment. This inspection report, also, eventually finds its way into the machine's file folder.

This method of keeping individual machine records is mentioned here simply because these records contribute substantially to the success of the major machine overhaul department operated by the maintenance section of the Douglas El Segundo plant engineering department.

While this major machine overhaul shop can handle emergency repairs on any big machine that breaks down unexpectedly, this is not its prime function. Its major purpose is to keep all major machines in tip-top operating condition at all times. This is where the individual machine records enter the picture.

Once each year, each machine folder is studied carefully. The number of times a machine has broken down is noted, along with the cost of repairs. The data contained in the annual inspection report is analyzed. This leads to a decision as to whether or not the machine is ready for a major overhaul. If so, it is scheduled to receive one.

This schedule is arranged so that the machine can be removed from the production line at a time when it will cause a minimum of inconvenience, and so that machine down-time will be kept to a minimum.

The scheduled overhaul may have

one or several objectives. In many cases it will serve only to restore the machine to its original operating condition. In other cases, the machine may be modified to make it more adaptable to the type of work it is doing. Other overhauls may include complete modernization of the machine, such as the addition of new and more accurate controls, the installation of a pressure oiling system, or a new method of machine drive.

C. M. Vigil, general foreman of the plant engineering department's maintenance section, points out that two prime factors inspired the organization of the major machine unit overhaul department.

"It is customary to send such machines to an outside specialty shop for overhaul and repair," Vigil says. "But this procedure gave us little control over the time element involved. It was impossible for an outside shop to give our work precedence over work from other companies, and many badly needed machines were tied up for a long time when out for repairs.

"Secondly, outside repair work on large machine units is usually by contract and the contractor accomplishes only that which is necessary to fulfill his obligations. Other parts of the machine that may need replacement or reconditioning in the near future are left untouched. We have found it more expedient to completely dismantle the machine, inspect every part, and then replace or recondition all worn parts in a single overhaul operation. Thus when a machine is returned to the production line, we know it is in good condition throughout, and, barring accident, will give trouble-free service for years.

Can do the work cheaper

"Finally, we can do the work cheaper than an outside organization will do it as there is no profit added to the price of the new machine parts that must be installed. The cost of transporting a machine to and from an outside repair shop is eliminated. And by doing a thorough overhaul job each time the machine is torn down, we substantially lengthen the time between overhauls."

Vigil points out that organization of the major machine overhaul shop was not costly. Space requirements were about 50 x 100 ft. Tooling in the department consists mainly of a variety of straight edges, surface plates, and other precision checking and measuring instruments. Machine work, welding, and similar jobs are

routed to and accomplished by associated shops in the maintenance division.

Personal pride plays an important part in the quality of overhaul work accomplished. When a machine enters the department for overhaul, it is assigned to one man and becomes his responsibility, thus any sub-par work would become a direct reflection on his ability.

Routine for each job

A definite routine is established for each overhaul job. When a machine enters the department, it is first stripped to its base castings. Then all parts are checked for wear, and those that must be installed new are ordered immediately so they will be on hand when reassembly occurs. The new parts are ordered by a plant engineering purchasing specialist to assure good quality at the lowest consistent price and to expedite delivery.

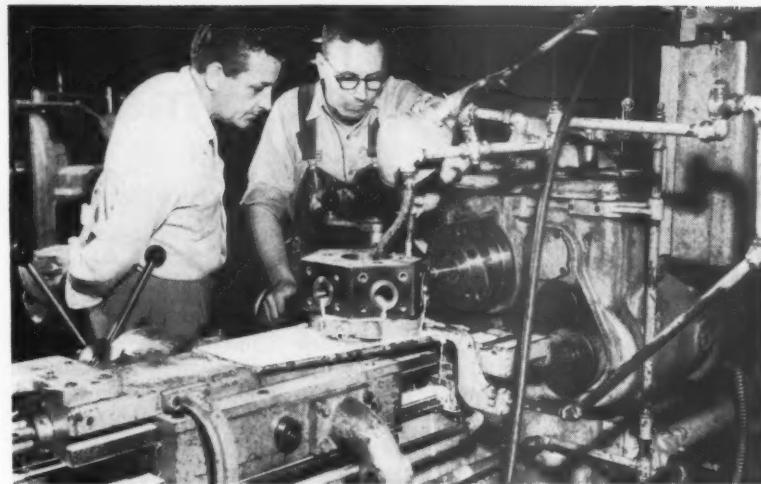
The man in charge of the job then begins reconditioning and refinishing all parts that will be reinstalled. Heavy castings such as bases, heads, and other major members are thoroughly cleaned and inspected for cracks, using a surface penetrant. All gears and other machined parts are cleaned and inspected for wear or other faults. Sliding guides, ways, and so on, are cleaned and polished. Columns, saddles, knees, and all alignment surfaces are checked and scraped to restore original, and sometimes better than original, tolerances.

All universal machine heads are completely disassembled, repaired and rebuilt. In general, all bearings are replaced, although in the case of a very expensive bearing, it may be reground to size. All motors are removed and checked, and the wiring of all electrical controls is inspected.

When overhauling turret lathes, all parts are re-aligned from the same center used when the lathe was originally manufactured, and then the hex turrets are drilled to coincide with this alignment. In many cases, turret lathes reworked in this manner will hold better tolerances than when new.

Worn shafts are hard chrome plated to size. In some cases, hardened ways are built oversize just sufficiently to compensate for wear in the saddle. But in general all oversize or undersize rebuilding is avoided. Thus during subsequent overhauls, odd-sized parts are not encountered.

In many instances, a machine is modernized when it is overhauled. Newer machines of similar design are studied, and if improvements are apparent that are not included in the



REBORING THE TURRET of a lathe after all other alignments have been made from a common center. Reworked lathes sometimes hold better tolerances than when new.

older model, they are added at the time of overhaul. This may require complete rebuilding of certain components, or modification of components to incorporate the new features. Oiling systems, control panels, machine drives, etc., are most often improved.

"We think that these modernization efforts, coupled with consistent and thorough overhauls, will maintain all our plant machines on a par with new equipment," Vigil says. "So far, the results have proved this contention."

The principal "customers" of this department, the foremen in the various machine shops where the overhauled machines are used, are hearty

in their praise of the work being done. "Machines are being returned to us in far less time and in better condition than when they were being sent outside for overhaul," one foreman said. Another foreman pointed out that major and unexpected breakdowns were far less frequent because of the periodic overhauls that kept each machine in top operating condition.

Still another foreman praised the manner in which the machines were scheduled for an overhaul job. "We know far enough in advance so we can prepare for the machine downtime. They don't just come in and cart the machine off to the overhaul shop without our knowing it."

FINAL ASSEMBLY on a milling machine after all parts have been cleaned and inspected. Often machines are modernized when overhauled.



New methods and controls to produce wonder metals

To successfully manufacture zirconium and titanium, this Oregon firm developed new concepts of methods and controls.

By Blake Jackson
Northwest Editor

NEW CONCEPTS of methods and control are the keys to the successful results which are being obtained in the commercial production of new industrial metals being developed in the West, notably by Oregon Metallurgical Corporation in its new plant at Albany, Oregon.

Titanium and zirconium, modern "wonder" metals which are found invaluable in today's nuclear science industries, react in their liquid states with every known element except argon and helium. Their reduction must be conducted within vessels which are evacuated or backfilled with argon or helium gas, and the process of melting and pouring into molds must be controlled with the utmost exactness to prevent contamination.

Essentially, the process is a variation of ordinary arc welding in which d-c power is fed to an electrode which strikes the melting arc to the workpiece.

At Oregon Met, the titanium or

zirconium metal is pressed into the form of an electrode bar—like an oversize welding rod—from titanium or zirconium sponge, the raw material, which has first been produced by a special process.

The electrode is consumed as it melts by its own arc, and the molten metal is deposited in the bottom of the vacuum furnace in the form of an ingot. Or, when castings are being made, the melting crucible is rolled over, pouring the metal into the mold which is contained within the furnace.

This vacuum or controlled-atmosphere melting of such metals as these, as well as columbium, tantalum and others, depends upon hairsplitting precision in the feeding and control of electric power to the arc during the process. The power and its control to Oregon Met's furnaces is provided through an installation of 20 Airco d-c. Bumblebee selenium rectifiers engineered by Air Reduction Co., which are arranged in two banks of 10.

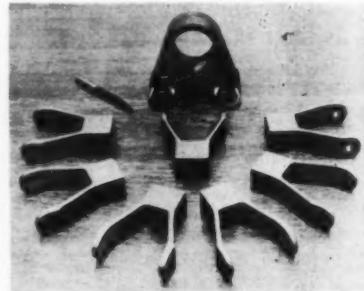
Each rectifier is of 1,000 amp. capacity to give a total capacity of 20,000 amp. for the installation. A remote control panel as part of the

system gives the exact desired amperage required at any time for the particular melt in progress.

Dry-disk selenium rectifiers, such as these, convert alternating current into direct current through a series of specially-treated, selenium-coated plates which have the singular property of accepting passage of electric current through themselves in only one direction.

The effect is that they split the undulating sine wave of alternating current, separating the straight polarity wave from the reverse polarity wave and, through the system, the latter is fed back into the circuit in the correct direction and combines to give direct current.

Without such a method as this the current would have to be converted by a large installation of motor-generator sets which would pose a much



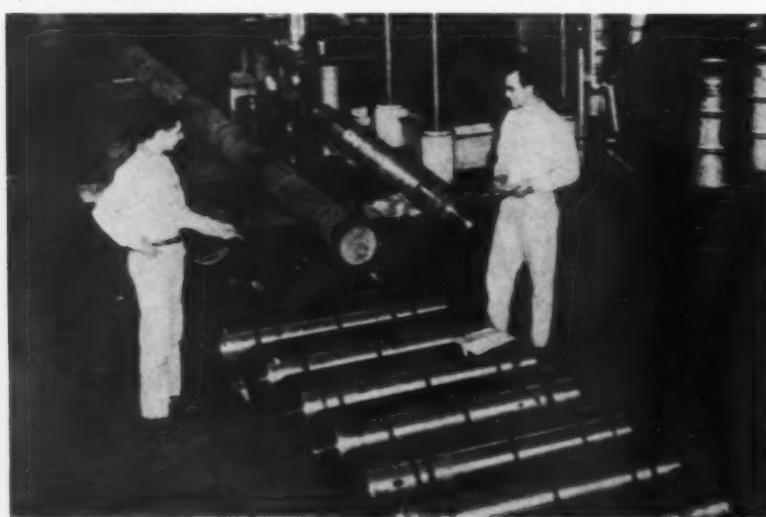
TYPICAL TITANIUM castings. These are used for holding rockets.

more difficult problem of flexible control to the furnace operations. The selenium rectifiers have no moving parts at all except a motor and fan in each unit for ventilation.

The important physical characteristics of titanium are its high strength-to-weight ratio and its resistance to corrosion. Zirconium has a growing potential value as a structural material in atomic power reactors because of its low rate of absorption of thermal neutrons and its resistance to corrosion at reactor temperatures.

At present Oregon Metallurgical's production of zirconium and titanium is well past the developmental stage, with commercial production of ingots and castings at a conservative 300 lb. a day with one-shift operation, according to *W. A. Aschoff*, castings department manager.

Aschoff foresees rapid growth in his company's output of these metals, and the continuation of the firm's research in metallurgy will steadily increase the range in types and alloys of "atomic age" metallic materials.





PERFECT CONDITION—Garrett officials examine Dodge Para-flex couplings kept in perfect condition by weather control.



AIR CONDITIONING UNIT that takes care of its own warehouse section, eliminating the need for long pumping of cool air.

Air conditioning steps up operations

Yes, air conditioning can reduce inventories, eliminate storage deterioration and up efficiency. Here's how . . .

By Leonard N. Sime
Southwest Correspondent

IT'S amazing what you can do with a twist of the wrist.

A Phoenix tool and supply company manager turned a little dial one day last summer and did these things:

1. Cut his previous 14 stock inventory turnovers per year to from 4½ to 5 turns per year.

2. Cut in half his costs of order writing to manufacturers.

3. Gained new business volume through sales he formerly couldn't handle.

4. Reduced his delivery costs.

5. Eliminated storage deterioration losses.

6. Increased personnel efficiency so that, even though business volume jumped, no new help was needed.

Yes, all this happened when Garrett Supply Company moved into its new quarters last July, and became the first company in the Southwest to feature a refrigerated tool and supply house.

Edwin R. Castle, company manager, discovered a regular Santa Claus working for him, when he turned on the new "stepped" air conditioning system installed by Arizona York (York Corporation, York, Pa.)

The system consists of five 15-ton, factory packaged units, two for office space, three for the warehouse. Two cooling towers, of 25- and 50-ton capacities, serve the system.

Each cooling unit has two compres-

sors with a step-start, step-capacity operation, self adjusting to combat outdoor temperature variations. The units are spaced throughout the 25,000-sq. ft. building so each serves a certain area. Since the units are double-compressor type, and work independently of each other, there is a wide safety margin in keeping perfect indoor weather the clock around.

Four kinds of trouble

At times during the year, Arizona's weather presents four kinds of trouble to rubber and metal goods: too hot, too dry, too wet, and daily temperature changes ranging from 30 to 40 deg.

Heat and dryness ruin rubber by shrinking it and making it brittle. In the case of matched V-belts, for instance, where belts don't contract evenly, this can be costly to the tune of as much as \$100 per belt.

Moisture rusts metals, of course. Even though all parts come to Garrett greased and/or paper-wrapped, handling can break the film slightly and permit expensive rust-spot damage to such items as precision cutting tools, inspection gages and steel chain belt sprockets.

"More important than that, however," Castle says, "items that are dried or rusted in the least amount naturally make customers unhappy, and we just can't have that."

Warehouse temperature is kept at a constant 85 deg, which keeps rubber goods cool enough, prevents

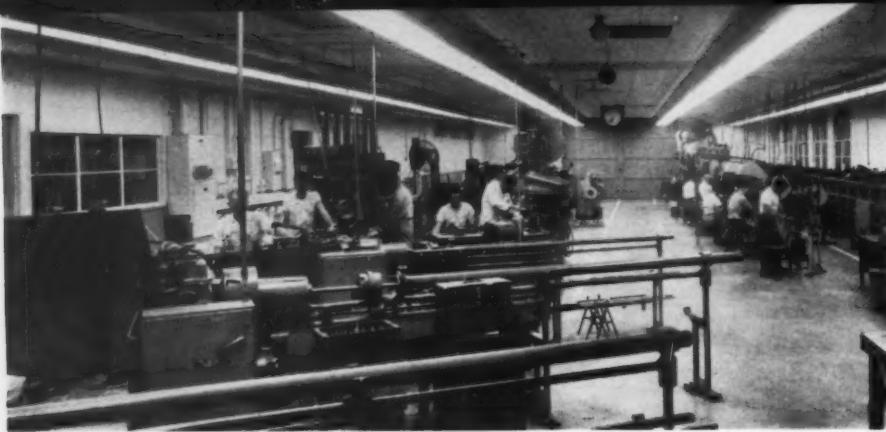
harmful periodic expansion and contraction of metals, and doesn't over-chill workers who have to move in and out-of-doors many times each day.

Moisture condensation begins on metals when humidity climbs above 50%. Rubber starts to dry out when humidity drops below the 40% mark. Regulation of humidity, therefore, precludes the possibility of either of these troubles. Abrasive dusts are filtered from the air, too, and with the new ideal inside climate Garrett's can carry much larger stocks of previously "perishable" merchandise, according to Castle. This is what slashed the inventory turn rate.

Order writing to manufacturers, formerly a constant time-consumer, was trimmed in half, by writing larger orders with no fear of possible stock spoilages.

In years past, Castle feels, sales were often missed when customers demanded larger orders on "rush" and inventory could not be kept full enough to supply them on the spot. These hurry-up jobs are now easily filled off-the-shelf.

The new Garrett home is further from the center of the city than before, and Castle expected will-call business to drop off. Instead, customers have found the new cool and comfortable will-call room at the building's rear, with its sit-down service and catalog counter, to be increasingly popular. Delivery costs have gone down fast in relation to business volume.



GOOD LIGHTING—rejects reduced by 32%.

Good lighting can brighten your production picture

High rejects and low efficiency may be caused by poor lighting. This firm found the answer.

ARE YOUR REJECTS high? efficiency low? tolerances slipping? If so, it may be because of your poor lighting!

One Western plant was faced with this problem. And listen to how *Jerry Schoen*, president, Metwood Manufacturing Co., Gardena, Calif., led his company out of the dark. The following was part of a talk given before the Illuminating Engineering Society Regional Conference held in April of this year.

"When we purchased our present plant buildings it was necessary to spend quite a sum of money to remodel, move what machines we had, and purchase additional equipment. When this was completed we had little to spend on lighting—and also, I must admit, we felt like most people do—

that lighting is an intangible and results are something you can't evaluate.

"In the latter part of 1954 we decided to do something about lighting, because our rejects were high, efficiency low and with the increase in business and close tolerance required, it became necessary to make some changes.

"We called in our lamp supplier and discussed the problems with him. He made a survey of our plant, asked detailed questions regarding payroll, number of employees, cost of product in relation to sales dollars and profits, and also losses due to rejects, re-works and lost time accidents.

"After careful consideration we agreed to 200 foot-candles in service since we work to very close tolerances in the machine shop, tool and die

POOR LIGHTING—high rejects, low efficiency.



shop, and the punch press area—and also are on a three-shift basis. Even so, we were not entirely convinced that lighting was a tangible, so we agreed to a 20-day audit thirty days before the lighting system was installed, and a 60-day waiting period before the second 20-day audit (since any change could affect net results) and we were interested in finding out exactly what would happen.

"We followed the suggested plan and, on comparing audits, we found an increase of 16% in machine time efficiency and a reduction of 26% in rejects and re-works.

"A year later we made a similar audit which covered more ground than the first. In this audit the machine time efficiency had changed very little but rejects and re-works were reduced 32%. Lost time accidents that year were off 52% and employee turnover down 58%—again, a commendable improvement. I might also add that the two latter figures in themselves justify the lighting system, without the other major benefits.

"We at Metwood are now convinced that good lighting is as much a production tool as any piece of equipment we own, and in fact contributes more to the overall lower cost of operation than any other expenditure we have made. I might add that we extended these lighting levels to our offices and I can assure you it is just as effective there as in our plant.

In making some kind of a cost comparison we tried to get down to the basic fundamentals of equipment that we use in our plant and came up with the following: Prior to purchasing this lighting system, we installed a Cincinnati milling machine at a gross cost of \$13,750. At that time the machine time charge was \$6 per hr., or \$48 per 8-hr. shift, and the labor cost in man hours was approximately \$20 per eight hr., earning a gross of \$28 per eight hr. The cost of the equipment, labor, and machine time charge affects one employee and one phase of our production.

"In comparison, the lighting system's gross cost, including a new 400-amp. service, was a little more than \$10,000. The cost of operating the lighting system, including power, taxes, depreciation, washing every 12 months, and relamping every two years, is estimated at a little over 54 cents per hr.; in 29 months our tube mortality was 7 and our ballast none, which is very commendable.

"We highly recommend that these levels of lighting be considered a production tool—it has proved just that in our plant."

What effective public relations can do for you . . .



Herbert Cerwin*

Q. Mr. Cerwin, many Western companies and plants have been quite successful without a public relations program. Why should they spend money for public relations?

A. Every company, plant and business maintains some kind of a public relations program, even if they don't call it that. There is no company which in one way or another does not spend money in public relations. Many are spending more for public relations than they realize, without getting their full money's worth by having an organized program which they can evaluate.

Q. Why is public relations important to a company or a plant?

A. There was a time when companies and plants were comparatively small, the boss knew all of his workers and most of his customers. By personal contact he was able to carry out an effective program. Today the picture has changed. Even a medium sized plant must practice good public relations to face the growing competition both for manpower and for customers. The day has passed when a company can operate in a vacuum.

Remember that people are better informed than they were 20 years ago. They also have a greater social consciousness.

Q. But what do you mean by public relations . . . isn't it pretty intangible?

A. There's nothing nebulous or mysterious about it and it's as practical and as hard hitting as anything can be. The results of either good or bad public relations are very tangible. But because public relations branches out into many fields and has wide-spread ramifications, there is no single phrase which neatly defines it.

Q. What are some of these fields?

A. One branch may deal with creating news and getting it published while another may do quite the opposite. Public relations also covers stockholder, employee and financial relations. Let us say that public relations means

the creation of better acceptance for company policies and products.

Q. Does management know enough about public relations?

A. No, although many people in management have an insight that tells them what might be done to build good public relations, they lack the training and techniques to make their efforts along these lines very successful.

Q. Can't a company achieve public relation goals through advertising?

A. We often use advertising to carry out public relations messages.

Q. Then what's the difference between advertising and public relations?

A. Public relations and advertising have related objectives, but they actually carry out two separate functions. Primarily, advertising sells hard and aims right at the consumer, while in public relations we try a more subtle method. We are more concerned with selling the company, and the products only indirectly . . . creating a favorable "climate of opinion" which assists all of the company's activities.

Here is a specific example: A company and its plant are losing prestige and its stockholders are unhappy. Profits are down, there has been labor trouble and management has failed to keep its customers and stockholders fully informed on the situation. Management finally asks for public relations assistance. Through properly placed stories on the financial pages, by letters to the stockholders and many other approaches, the company, its management and its products suddenly begin to get prominent mention and to be talked about. The company and its plant are put in a more favorable light. Employees gain new pride in their company and their production reflects it.

Public relations succeeded—advertising would have failed.

***HERBERT CERWIN** is one of the West's best-known public relations counsellors. For more than 20 years he has assisted some of our largest companies and associations. At the same time, he has guided the public relations efforts of many smaller companies. Author, journalist, historian and one-time State Department diplomat, Cerwin brings a wide fund of knowledge to his profession. The Cerwin organization has offices in San Francisco, Los Angeles and New York.

Q. All right, but that's about a company that's in trouble.

A. True, but unfortunately, many companies do not seek public relations help until they are in difficulties, and often it is too late, or the job presents serious problems which need not have existed.

Q. But suppose a Western company is doing well, its profits are good, the products are selling well—why, then, do they need public relations?

A. I'll answer that by asking a question . . . would such a company stop advertising? No, of course not. They doubtlessly have some kind of a public relations program without being fully aware of it.

Q. But wouldn't they be better off if they had a concrete program that they understood and that would work favorably in the interests of the company? Or are they so well satisfied, so isolated, they believe everything will always go well for them in the future?

A. Let's take a specific example. Company X runs plant X. It doesn't sell directly to the public. It is a medium sized company, employing 300 persons. It does a good business and profits are good. Its advertising budget is less than \$50,000 a year. Do they need public relations?

Much more than a large corporation. Seventy-five per cent of large corporations in the United States today have public relations departments or employ outside public relations counsel. Large corporations are well established. The small company and its small plant face tough and increasing competition. The company and its products are known only in the trade. They get a large contract and they have to expand. They need to sell stock. The company is virtually unknown to the public or brokerage houses. They have to start from scratch.

Or this same company may have for years been producing in their plant a product that has been well accepted. Then another company which is widely known begins to manufacture the same type of product. Through an effective public relations program it gets wide publicity in the newspapers and in the trade and consumers' magazines. It begins to win new customers. The small company soon starts to feel the pinch, and survival may even be doubtful.

Remember that public relations is a vital tool of modern business practice.

Q. You mean like an IBM machine?

A. Yes. Company presidents and plant managers are quite willing to spend \$100,000 for a machine that increases efficiency and reduces costs. Such a machine is a tangible investment.

Good public relations can bring about conditions which in the long run can save and make many more dollars than the new machine.

Q. How much does a public relations program cost?

A. That would depend on the size of the company, the plant and the coverage and the objectives involved. In comparison with advertising and other types of promotion, public relations is not expensive.

Q. Do you work for companies which have their own public relations departments?

A. Yes. We have done work for Westinghouse, for example.

Q. What is the difference between a public relations department and an outside counsel?

A. As you know, self-analysis by an individual or a company is seldom successful. The proper perspective can



"A company can no longer operate in a vacuum. You face growing competition for manpower and customers . . ."



"Public relations is concerned with creating a favorable 'climate of opinion' which assists the company's activities . . ."

be obtained only by looking from the outside in. An outside point of view not only brings with it a fresh perspective, but such a viewpoint is not biased and influenced by what management is thinking. Too many heads of company public relations departments are prone to reflect top level thinking and are likely to give opinions which are in harmony only with management.

Q. Should a small company have its own public relations department?

A. Not necessarily. For a small company it is much more economical and more effective if they employ a top-rate firm which can give them the benefit of years of experience in the field and the wide contacts they have established.

Q. How do they look for such a firm?

A. Find out what companies use public relations counseling and ask them to recommend three or four firms. Then interview them and examine the list of clients they represent, and what they have achieved for these clients. Be wary of boastful claims and promises and of cut rates. There are no bargains in public relations or in anything else. Try to get the best, as you would choose a doctor or an attorney. There are quacks in public relations as there are in any profession.

Q. There are some advertising agencies with public relations departments . . . what about them?

A. Some do the work with integrity, others have a mimeograph room which they call a public relations department. But in the long run, advertising and public relations don't mix too well. Several large advertising agencies employ public relations counsel in their own interests.

Q. Can medium-sized Western plants afford public relations counsel?

A. We find that companies want effective results and don't mind paying to get them. Once they have had a "taste" of good public relations they recognize they have made a sound investment.

Q. Do Western plants need public relations?

A. Definitely. The West has been experiencing a tremendous industrial growth. Many plants are new and so are their management and personnel. They are hiring people so fast that often their relations with employees and customers are not as good as they should be.

Q. You mentioned employee relations . . . is that part of your work?

A. Yes, an important part. We are frequently asked to



"Instead of a few lines of type, public relations will get you the real spread the story may deserve . . ."



"Public relations improves communication between management and personnel and achieves better employee relations."

set up public relations programs that will improve communications between management and personnel with an objective of achieving better employee relations.

Q. What do you think of present employee relations in Western plants?

A. In some they are good and in others, no real effort is being made to set up a two-way communication system between management and employees.

Q. What do you mean by a two-way communication system?

A. In many companies and plants, employees are constantly being told how good the company is, what it does for its employees, and how proud they should be of working for the company. But nothing is set up so that the employees and, in many cases, officers of the company, can communicate their opinions and often their grievances to management. We all know that a "dead" telephone at the other end of the line raises hell with communications, and yet management still persists in talking, but not hearing what its listeners have to say.

Q. How can employee communications be improved?

A. Through an effective public relations program and by organizing a system whereby employees are taken into the management's confidence. Remember that one of the main problems of plants and companies today is keeping good men, including engineers, from leaving. Top employees are restless because they seldom are made to feel that they are part of the company. For example, they often read about major changes taking place in the company or plant in the newspapers, when they should have been informed ahead of time. House organs could be helpful in this regard.

Q. But didn't you recently make a speech before the Industrial Editors Association in which you blasted house organs?

A. I certainly did. I predicted that within the next ten years many house organs would be dead because one of these days management is going to examine the amount of money put into house organs and weigh the benefits and results. In the majority of cases, they would find that the house organ is not being read and has little or no influence with employees.

Q. Why is that?

A. Employees read and look with suspicion upon most company publications. They call them "company propaganda sheets" or the "company social breeze." The reason

for this is that the majority of house organs are edited to please management. Few of them carry information that is of real interest to the employees, nor do they make an effort to print material which they can't find in any other publication. The fault is generally not with the editor but with his boss. Too many, too, load the company publication with social items that no one gives a damn about.

There is a definite need for a house organ which has readership value. One which rings with honesty and sincerity can exert a dominant influence.

Q. What's your opinion of the average press releases sent out by Western plants to trade publications and newspapers?

A. I would much rather ask you that question . . . you see them . . . what do you think of them?

Q. I admit that most of those I see are terrible . . . badly worded, too much puff, not enough punch. But what can be done to improve them?

A. When a company or a plant has an engineering problem, they turn it over to an engineer and not to the auditor or the advertising man or the salesmanager. When they have a publicity release, and they don't have a public relations department, they turn it over to almost anyone who will volunteer to do it. The result is a botched up job and so they get a few lines or inches of type instead of the real spread the story may deserve.

Q. How should they handle it?

A. Turn it over to a professional. He's trained for the job and knows how to get the most out of the release.

Q. Then why don't companies and plants employ professional relations people as they do engineers?

A. Many do. Those which don't, while they may recognize the importance of public relations and the need for professional assistance, put it off because they think they can manage to do without it or because they consider it too expensive. They are like people who put off going to the dentist.

Q. Is the employment of a professional absolutely necessary?

A. No, many companies and plants, as we have discussed, do it by makeshift methods. There are also companies and plants whose management have little regard for their employees and who get by as close as the law or unions permit. They won't be interested in any type of public relations.

But I believe that within the next ten years, every company and plant whose management has any vision, will employ professional PR help as a matter of prime necessity. They will recognize the importance of public relations as in recent years they have learned the value of research.

Q. As a final word, what is your advice to smaller companies on public relations?

A. Think of public relations not as an expenditure of money, but as an investment that will pay off dividends. Select the best professional organization you can. Go over the objectives you want achieved and let them plan a program. Once you have approved that program, let the "pro" carry out the program the way he thinks is best, without interference. If he's good he knows his business. And be wary of people who promise a lot for very little.

Thank you, Mr. Cerwin.

How **SKF** Saved in 7 Ways

and at the same time improved its roller bearing cages by using the right

Revere Brass Strip

SKF Industries, Inc., Philadelphia, Pa., like other progressive organizations, is constantly seeking new ways to improve its products and at the same time cut production costs.

With this in mind they recently reviewed the kind of brass which was being used in

their spherical roller bearing cages from the standpoints of quality and fabrication. It was then that Revere's Technical Advisory Service studied the problem first-hand and made recommendations to the **SKF** production and engineering departments.



SKF IMPROVED TYPE "C" Spherical Roller Bearing cut away to show how the cage, made of Revere Brass Strip, fits into the bearing. Due to its advanced internal design, this bearing provides greatly increased capacity and service life.

HERE IS "window-type" cage of **SKF** Spherical Roller Bearing, made in two pieces, one for each row of rollers. Cage is made from rugged Revere Brass Strip at the Shippensburg, Pa., plant of **SKF** Industries, Inc.



The result was the adoption of specification changes in brass strip as recommended by Revere which gave **SKF** these 7 money, time and tool-saving advantages:

- 1 One bore pressing operation has been eliminated. Machining is more easily accomplished. Less machining is required.
- 2 Tool life has been increased with some speeds increased up to 100% and feeds up to 30%.
- 3 Rework due to burrs has been greatly reduced. One step less is required in the deburring operation while savings through reduced cycle time for remaining deburring operations are up to 40%.
- 4 Chips are small now . . . there is no "angel hair" to clutter work area.
- 5 Life of punch used in notching roller bearing cage has been doubled. Now a run may be completed without making tool adjustments due to sharpening tools.
- 6 Machining speeds and feeds have been substantially increased over those in machining the former alloy.
- 7 Die setters report that considerable work has been eliminated in setting up the tools used.

And, all of these money-saving things were accomplished without sacrificing quality—in fact the quality of these roller bearing cages was *improved*!

This is still another eye-opening example of Revere supplying the metal that will do the best job and with the greatest economy . . . be it brass, copper or aluminum or any one of their alloys.

Why not call in Revere's Technical Advisory Service to review your operation? It may mean money saved with an improved product to boot.

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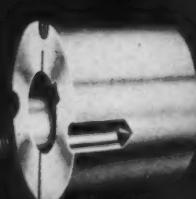


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Save time in mounting. Cut down-time on production machines. Standardize with Taper-Lock, the *interchangeable* bushing. The same Taper-Lock bushing fits sheaves, sprockets, couplings, conveyor pulleys. That means smaller inventories of power transmission parts. And it means quicker changes when necessary to keep production lines running!

Taper-Lock bushings are available in a range of sizes which makes it easy to change from one size shaft to another. Taper-Lock products slip onto the shaft quickly — hold with the firmness of a shrunk-on fit — come off easily, without shock to bearings or machinery. You'll profit by standardizing on Taper-Lock.

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CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new methods. Look for his name under "Power Transmission Machinery" in the yellow pages of your classified telephone directory — or write us.

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WESTERN INDUSTRY — November 1957

UP WITH QUALITY

continued from page 40

through would uncover causes for defective workmanship, and corrective measures could be taken. Top management should encourage both line and staff supervisors to analyze errors thoroughly.

Each supervisor and employee should be informed as to the total amount of scrap and salvage occurring in a certain period of time. They should be told that the scrap and salvage is a relatively low figure compared to the actual amount of defective workmanship. By this I mean the quantity of parts made which are just "border-line" cases, in that the part is not made exactly to print specifications and much checking and analysis must be made before a decision is made to accept it.

Also, it is evident that all defective workmanship is not detected in the plant, and unknowingly the ultimate customer may be installing sub-standard repair parts, or equipment, which will not function properly.

The principal objective of top management should be to motivate personnel to be "job conscious." An individual, whether an employee or supervisor, who is "job conscious," possesses the inherent qualities which produce quality workmanship.

In order for top management to improve plant quality and reduce losses from defective workmanship, tangible and intangible methods and means must be used. Among tangible efforts are:

1. Training is necessary for employees and supervisors to understand fully their duties and responsibilities. Training of this type would make the individual more aware of what is expected of him.
2. A continuing effort from top management to have analyzed the reason, or reasons, for each frequency or occurrence of error.
3. Insure that the company has an adequate Quality Control Department with proper responsibilities so that it can function effectively.
4. Provide the shop with accurately prepared operation sheets, explaining clearly the manufacturing operations and tooling required.

The other area, the intangible one, is more complex. The principal objective of top management is to motivate employees and supervisors to be more "job conscious." This is a difficult problem as there are external conditions and factors outside of management's control that make it difficult to motivate personnel. The intangible goals which should be achieved in the long run are:

1. Self-recognition and regard for employees and supervisory personnel in satisfaction of job accomplishments.

factory job accomplishments.

2. Insure that immediate and top management are respected for their personal qualities of leadership.
3. Promote the plant and product to gain local recognition, which will make employees proud to be associated with the firm.

By reviewing the various types of error classifications in this report management can formulate a definite plan or program to reduce the frequency of errors in each of the various cases.

The necessary plans or methods that must be installed to improve conditions are dependent upon the individual, the plant, the department and personalities. The tangible and intangible recommendations should be instituted in a manner, or approach, that is best suited to the particular plant.

Portable power tool saves time in change over



BY USING A PORTABLE ELECTRIC-POWERED TOOL to change four Hummer screens in its clay preparation department, a Washington brick and clay product plant is saving \$7.97 per day in labor costs and more than 3 1/2 hr. per day in production time.

The job required 45 min. when workers were doing it by hand wrench and had to be done six times each day. Using Ingersoll-Rand electric Impactools to remove and replace the twenty $\frac{5}{8}$ -in. bolts holding the screens in place has reduced this time to eight minutes for the change of all four screens.



FLEXIDYNE
THE DRY FLUID DRIVE
100% efficiency at full load!



DODGE-TIMKEN
America's Quality Pillow Blocks!



SEALED-LIFE V-BELTS
The life is sealed in!

Write for Bulletins!

- Flexidyne Dry Fluid Drives and Couplings. Bulletin A-640-A.
- Roller Bearings. Load ratings, dimensions, etc. Bulletin A-638.
- Sealed-Life V-Belts. Complete data and sizes. Bulletin A-606-A.

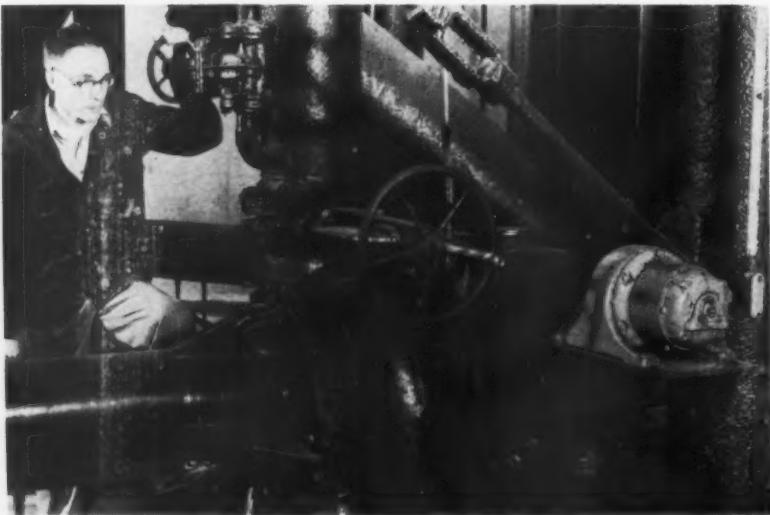
DODGE MANUFACTURING CORPORATION
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DODGE
of Mishawaka, Ind.

... for more details, circle No. 34
53

selected production and maintenance ideas for Western plant operating executives

Unique pumping application solves problem, saves space



ACAP pump operates under conditions of widely varying head.

UNDER CONDITIONS OF WIDELY VARYING HEAD (2.5:1 ratio), Crown Zellerbach's Port Townsend (Wash.) division maintains a constant flow of black stock from blow tank to knotters by using two Allis-Chalmers ACAP pumps.

The recently installed application is believed to be unique.

The ACAP pump is constructed with an adjustable sleeve inlet which can be externally positioned to vary internal slippage. With the sleeve positioned as close as possible to the impeller, delivery is 3,300 gpm. of 3% kraft black stock at 65-ft. head. Thirty-two revolutions of the sleeve control shaft bring the sleeve to its fully retarded position, where delivery is zero.

Automatic positioning of the sleeve

is accomplished as follows: a conventional venturi section and pneumatic flow transmitter-receiver-controller results in a 3-15 psi. air signal whose value is a function of the flow deviation from the set point.

The controller output air signal is led to two pressure switches. One of these opens on rising air pressure at 9 psi. The other closes on rising air pressure at 10 psi.

The pressure switches are connected to a reversing linestarter. The output from the linestarter determines direction of rotation of a $\frac{1}{3}$ hp. 25 rpm. gearmotor connected to the ACAP pump sleeve shaft. The gearmotor drives the ACAP sleeve in a direction to bring the black stock flow back to the set point. At this point the controller output is in the

pressure range where both switches are open and the gearmotor is stopped.

In practice, the gearmotors are stopped most of the time, not continually hunting. Deviation from the control point is about 5% (total) of chart—adequate for the application.

The pump sleeves are equipped with handwheels that permit manual setting in case of failure of any part of the control system. Double limit switches are installed to stop the gearmotor in case of overtravel.

Two complete units are installed and normally operate separately. The units, however, are interconnected to act as mutual spares.

The Port Townsend installation saves valuable space. Cost of the pump, plus motor, is little more than that of the hydraulic or electric variable speed drive widely used in this application. Throttle valves in the 8 in. or 10 in. size required for the black stock constant flow system are expensive and subject to plugging.

Telautograph units chop paperwork time from 24 to 4 hours

PAPER WORK PROCESSING TIME HAS BEEN CUT from 24 hr. to a minimum of 4 hr. at the Oakland

Writing three messages at once.



**17th Century racks
and frames were made
with boards sawed
by the framed**

Pit Saw*

**Today, for framing,
industry
uses this
new ingenious**

GARRETT "FAMOUS BRAND"**

**DEXION SLOTTED ANGLES in cold rolled steel can be quickly cut by the Dexion patented cutter and assembled by bolting into all types of racks, frames, catwalks, carts, shelves, bins and other structures. They are great time and space savers, can be dismantled without damage and used repeatedly.

The ingenious design of Dexion Slotted Angles allows them to be used to advantage in all sorts of industrial applications. Their high quality and utility is typical of that in the other more than one hundred famous brands of tools and industrial supplies carried by the Garrett Supply Company. Our service will please you, too, so whatever you need, "Get it from Garrett!"

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... for more details, circle No. 35 on Reader Service Postcard

Army Terminal of the Bay Area Army Terminal Center by the installation of telautograph machines.

These machines can write three messages on three separate sheets at three separate places—with one pencil! Of course, you can see the savings in time, telephone use, messenger service and stenographic work.

A telautograph, according to the dictionary, is "a facsimile telegraph for reproducing writings, maps, etc." The motions of the writing pencil are reproduced by electromagnetic means in remote receivers. While the pencil

requires only a light touch on its paper, its message deals in tons of supplies ready for shipment from military depots and other points of supply to the terminal.

Installation of this time-saving equipment at Oakland was based on a suggestion by Lt. Col. William M. Nyburg, Terminal Center Deputy Director of Operations, who lives at 5235 Broadway Terrace, Oakland.

A permanent written record of the transaction is afforded by telautograph and the details are known by all parties during the space of one phone

call. Such written messages may be as long as needed, and may be reproduced electrically in any quantity desired. Mistakes in transcribing by hand are thus minimized, and time spent in writing letters is saved.

The machines were installed by the TelAutograph Corp., San Francisco.

New packaging idea reclaims containers for further use

A NEW PACKAGING SYSTEM—one that can cut in half the cost of certain types of packaging used extensively by industry—was demonstrated in Los Angeles by the arrival of a truck load of used box materials from McClellan Air Force Base, Sacramento, Calif.

The test shipment of materials, worth \$875.84, cost \$97.90 for shipping charges. Normally, the cost of salvaging nailed boxes is too great to allow shipment back to the manufacturer for re-use.

The new system, which uses modular fixed-size, interchangeable panels

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APPLETON, WISCONSIN
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... for more details, circle No. 36 on Reader Service Postcard



This five-cent clamp can save millions.

held together with a spring clamp, trade-named Krimp, (described on page 58 of February 1957, WESTERN INDUSTRY) was developed by North American Aviation, Inc. If placed in universal use, it could save industry millions of dollars annually. North American engineers have estimated.

At present, hundreds of thousands of plywood or paper overlaid veneer boxes are used annually throughout industry. Although a box of the size necessary to ship an electric typewriter costs \$6, many are scrapped



Another STANLEY STEEL STRAPPING* on the job

Power can triple your packaging output, too!

The Bilco Company, New Haven, Conn., manufacturer of "America's finest basement door" credits The Stanley Steel Strapping System with "tripling packaging output, reducing product damage to a minimum, and completely eliminating pilferage." These benefits stem from the Stanley Steel Strapping Specialist's recommendation that Bilco wrap door parts and equipment in corrugated board, reinforced with the strength of Stanley Steel Strapping. For maximum packaging speed and mobility, a Stanley Electric Skid Magazine Tool installed on an overhead mount is used to power-tighten the strapping to a pre-set, uniform tension.

The first step in speeding up your packaging output is to call in the Stanley Steel Strapping Specialist and get his recommendations for *power packaging*. He'll prove his facts with a personal demonstration. **WRITE FOR FREE COPIES** of the new "Power Strapping" booklet and the "Stanley Strapping Manual of Packaging and Shipping" to **STANLEY STEEL STRAPPING**, Division of The Stanley Works, Dept. K, 1216 Lake Street, New Britain, Conn.

*The system-atic way to solve specific packaging and shipping problems



INSURE IT-SECURE IT WITH STANLEY STEEL STRAPPING

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY

STANLEY

This famous trademark distinguishes over 20,000 quality products of The Stanley Works—hand and electric tools • drapery, industrial and builders hardware • door controls • aluminum windows • metal parts • coatings • steel and steel strapping—made in 24 Stanley plants in the United States, Canada, England and Germany

... for more details, circle No. 37 on Reader Service Postcard

after being emptied, since cost of salvage or conversion to other use is relatively high.

The new system uses a small number of panel sizes to provide a wide variety of box sizes and shapes. The use of the clamp allows for assembly and disassembly of the panels without damage to the wood and in a minimum of time. Panels can thus be re-used from five to ten times.

Development work on the new

system has been going on for over two years, according to F. R. Kostoch, L. A. section head, engineering material and process, for North American.

"The truck load of box panels received at North American," Kostoch said, "cost less for complete disassembly and preparation for shipment than reclaiming costs of nailed boxes. In fact, it cost less to break down and load these box materials than destroying nailed boxes would have cost."

Fork lift tire replacement time slashed to 9 minutes



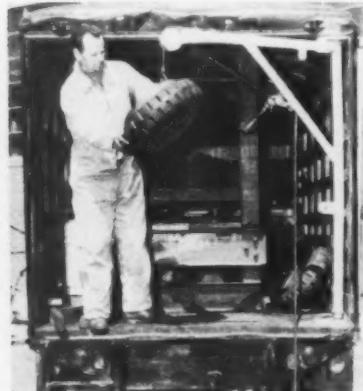
Operator removes tire from fork lift . . .

A MOBILE SERVICE is trimming fork lift tire replacement to 9 min. for each tire.

Formerly, tire replacement usually caused a one-half to one day downtime for fork lifts. But now replacement can be made on the spot and in minutes.

The service consists of a motor van

raises it to van . . .



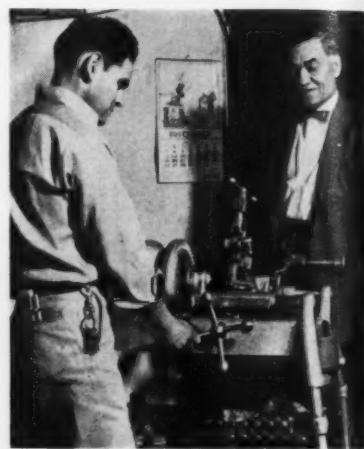
with a tire presser mounted in the rear. To replace the tire, the operator removes it from the fork lift, raises it on a boom hoist mounted on the van, swings the tire over to the press, presses it, and lowers it on the hoist.

This service is being offered by Industrial Lift, Inc., of Hayward and Robert Braum Co., in Los Angeles.

swings it over to press . . .



Blind operator proves simplicity of power threader



Raised numbers all that's added . . .

A POWER TOOL SO SIMPLE a blind man can use it is in operation in Jesse's Hardware store in Los Angeles.

And the owner himself—blinded by a bullet from a Japanese sniper in World War II—is proving that a blind man can operate this power tool.

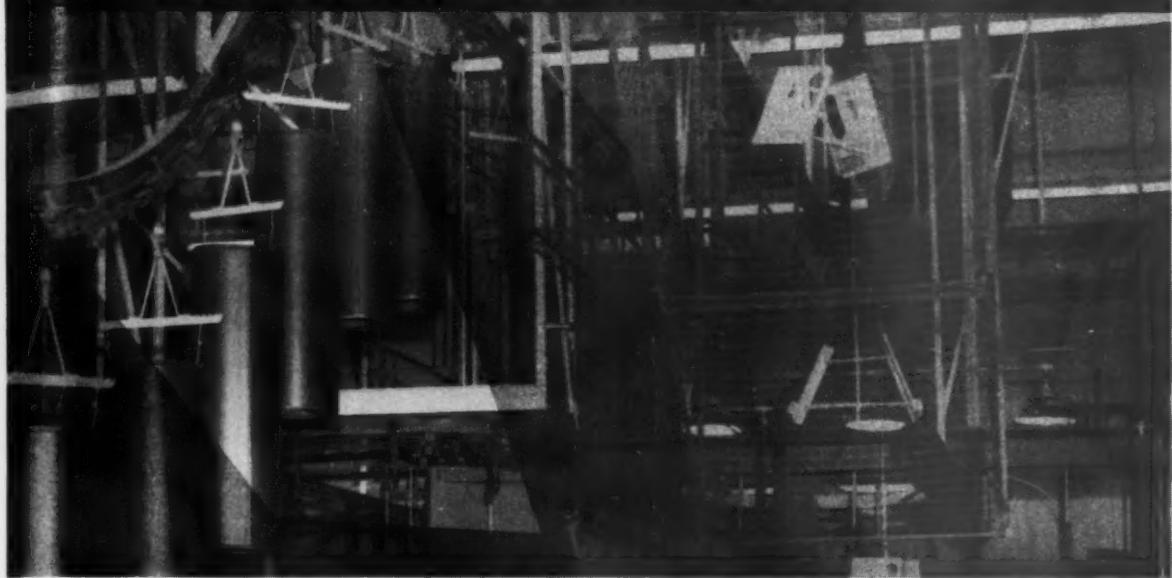
It is a Ridgid (Ridge Power Tool Co.) 500 A power threader which Jesse Castillo uses to cut, ream and thread pipe and bolts from $1\frac{1}{8}$ to 2 in. Although the machine is a standard model except for raised numbers on the die heads and gage bar, which Ridge Tool made especially for him, Jesse turns out work as fast and as perfect as anyone can do.

"Monster" gobbles garbage 4 times faster than others

THE "MONSTER" IS SAVING \$86,000 annually at Plant 2 of Boeing Airplane Co., Seattle.

The "monster" is a Rube Goldberg-type mobile garbage-disposal outfit that is accomplishing the work of four trucks. The Rube Goldberghishness stems from the automatic ability of the machine. It not only picks up the garbage containers with its arm-like

OVER TWO MILES OF OVERHEAD CONVEYORS KEEP WATER HEATERS ON THE GO



Just a couple of yards of a 10,748-foot Overhead Trolley Conveyor System. Installation at Day & Night Mfg. Co. and the Payne Company's new plant in La Puente, California . . . Alden engineered, of course.

OVERHEAD TROLLEY CONVEYORS offer the simplest, most flexible and economical means of modern material handling, meeting the requirements of practically every industry. Adaptability, low cost and savings have won their acceptance from the beginning.

Flexible, Overhead Trolley Conveyors are installed to follow almost any path in any type building, old or new, changing direction vertically or horizontally as needed. Loads weighing from a few ounces to over a ton are speedily and economically handled.

These conveyors can be raised to the ceiling or between roof trusses, providing valuable storage of parts in process, leaving floor space uncluttered and available for other operations.

A constant supply of parts to processing or assembly points is maintained. Stock room space requirements are reduced. Inventories are kept to a minimum. By keeping the floor clear, you gain good housekeeping, eliminate accident hazards.

As one of the largest manufacturers of Overhead Trolley Conveyor Systems on the Coast, Alden offers experienced engineering service to plan the most efficient system for your individual needs.

Phone or Write for Further Details

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Sprockets

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Industrial Waste

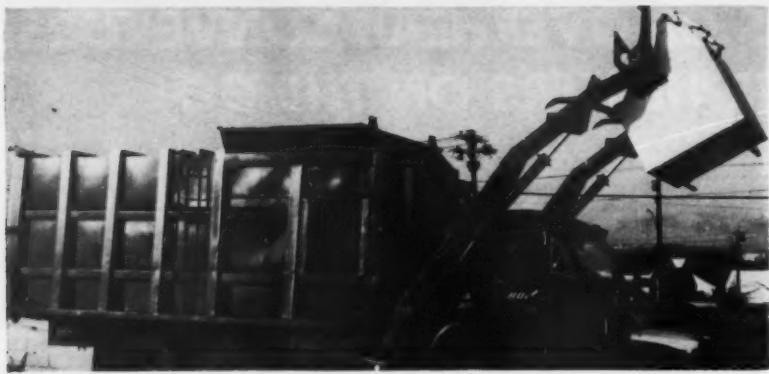
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Arms hoist garbage, dump it into truck at Boeing plant.



YEARS OF SERVICE

...for fifty years Pacific Pumping Company has consistently improved pump design and pumping efficiency. A continuing program of research, standardization and sound engineering has earned recognition as "The Best in the West."

...and now PACIFIC SUBMERSIBLE NON-CLOG SEWAGE PUMPS

COMPACT AND EFFICIENT SEWAGE EJECTORS

Complete pump-motor unit lowers into sump or pit and operates under water. Electrode controls and automatic switch install below working surface. Designed for continuous operation under extreme heavy duty or flood conditions.

High efficiency Pacific Non-clog sewage pump with choice of single or 2-port impeller couples to factory sealed motor filled with highly refined dielectric oil—seals out moisture, vapors, corrosive gases and abrasives...seals in lifetime lubrication.

Wide range of sizes and capacities.

Installs in any position,
and in every type of pit.

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... for more details, circle No 39 on Reader Service Postcard

lifts, but boots the refuse out with the precision of a gridiron magic-toe artist.

The unit—a Dempster Dumpmaster—can gulp 20 cu. yd. of trash, twice as much as both of the retiring carriers together. Plant services engineers figure that the new equipment, costing some \$60,000, could be amortized at \$280.32 a day. In other words, the "monster" will pay for itself in less than 215 working days.

Other advantages of the new machine are improved sanitation, reduction of fire hazards and the elimination of smog. After automatic pickups, the Dumpmaster takes the full load to the city of Seattle's sites for dumping of burnable wastes. A large hydraulic arm ejects the trash.

Two metal hooks ease changing of sticks of coils

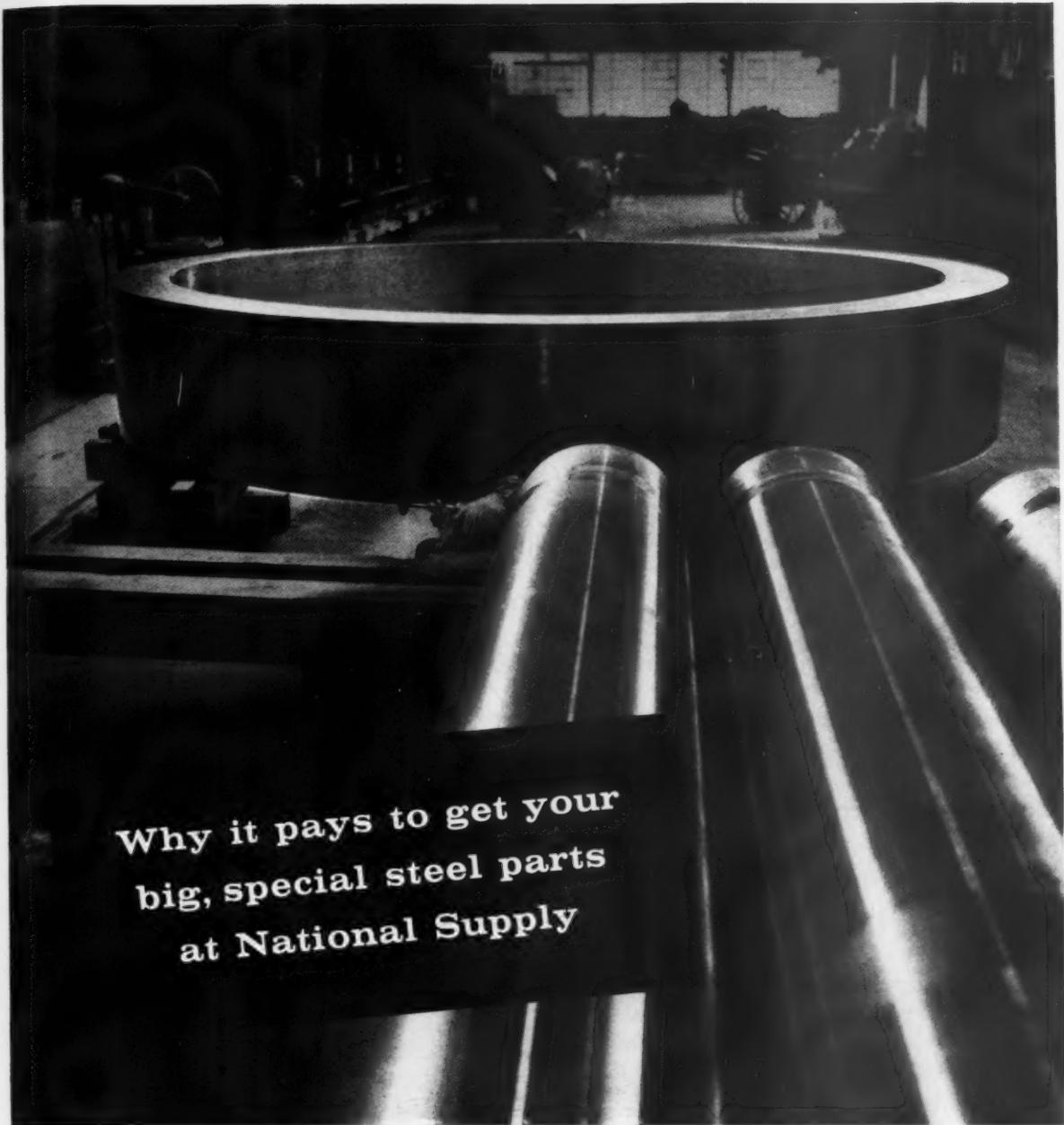
CHANGING STICKS OF COILS has been simplified at Lenkurt Electric Co., San Carlos, Calif., by a modification of a standard bench-type coil winder.

Two metal hooks bolted to the framework of the machine below the carriage assembly are the only parts added. The hooks are placed vertically, with the points forward and the open sides down, since uncut coil wires pull the mandrel up.

When the mandrel containing the completed stick of coils is removed from the driving head and tail stock, it is placed in the inverted hooks. A pin on the left end of the mandrel fits into a hole in the tip of the left-hand hook, preventing the mandrel from turning.

Tension of the wires coming down from the overhead derrickers through the wire guides holds the mandrel in place while the operator clamps the new mandrel and stick in the winding machine (model AM, made by Coil Winding Equipment Co., Oyster Bay, N. Y., and distributed in the West by Tri-State Supply Corp., Los Angeles, San Francisco and Seattle).

When the new stick is in place, the operator removes the old mandrel and stick from beneath the hooks, brings it forward and up around the new stick and rests it on top of the wire guides. Preserving tension in the



**Why it pays to get your
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at National Supply**

Two of the many big, special steel parts recently produced at National—
a giant steel tire and heavy wall, high pressure tubing.

One company needed this giant alloy steel riding ring for a cement kiln. They brought their requirements to National Supply's Torrance, California, plant. At National they found the most completely integrated facilities on the west coast. They found engineering skill, experienced personnel, quality control and economical handling readily available to meet their particular steel parts problem.

A few of the many more large and difficult steel parts produced recently at National include: an 18-ft., 26,700-lb. tube ram forged for a hydraulic scrap baling press; a 7-ton trunnion manufactured for a 655-ton capacity lifting beam; a 30-ft. vacuum table machined and assembled for a skin mill; a 58-ton anvil for a 7500-lb. forge hammer.

This variety proves National Supply's ability to meet western industries' special steel processing needs. If you want to learn more about our completely integrated facilities and services, call or write the address below—or better still, plan to visit the plant soon.



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INDUSTRIAL PRODUCTS DIVISION

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Lubricants**



Solves Toughest
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Works wonders when used with cutting oils. Simplifies deep drawing, metal stamping, milling, punch press work, etc. Prolongs life of dies. Eliminates sticking. Makes things operate smoother. Reduces friction and wear.

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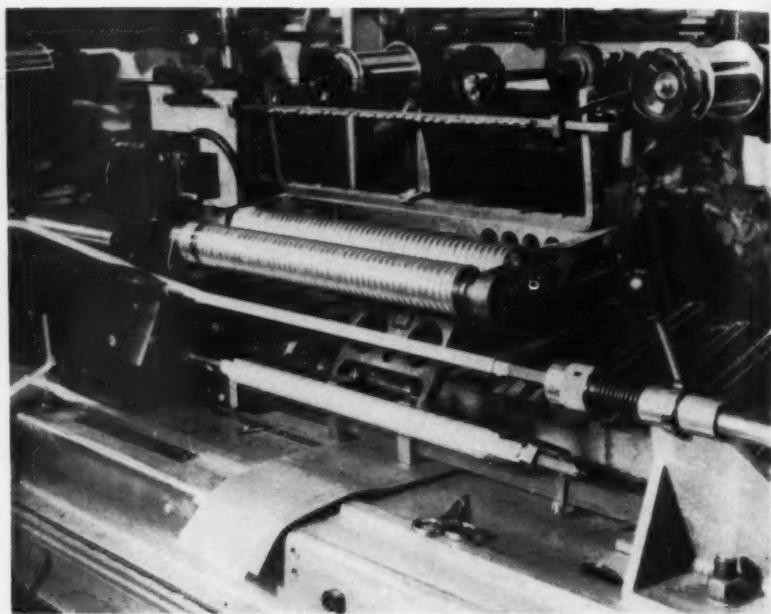
SCIENTIFIC LUBRICANTS CO.
3469 N. Clark St. Chicago 13, Ill.

...for more details, circle No. 41

wires, the operator runs a strip of tape along the new stick securing the wires.

A single motion along the edge of

the new stick with scissors, a knife or a fingernail severs all the wires from the finished coils.



Toward the bottom of the picture, note the two metal hooks bolted to the framework of the machine. The hooks are placed vertically, with the points forward and the open sides down, to prevent pulling up.

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WESTERN INDUSTRY — November 1957

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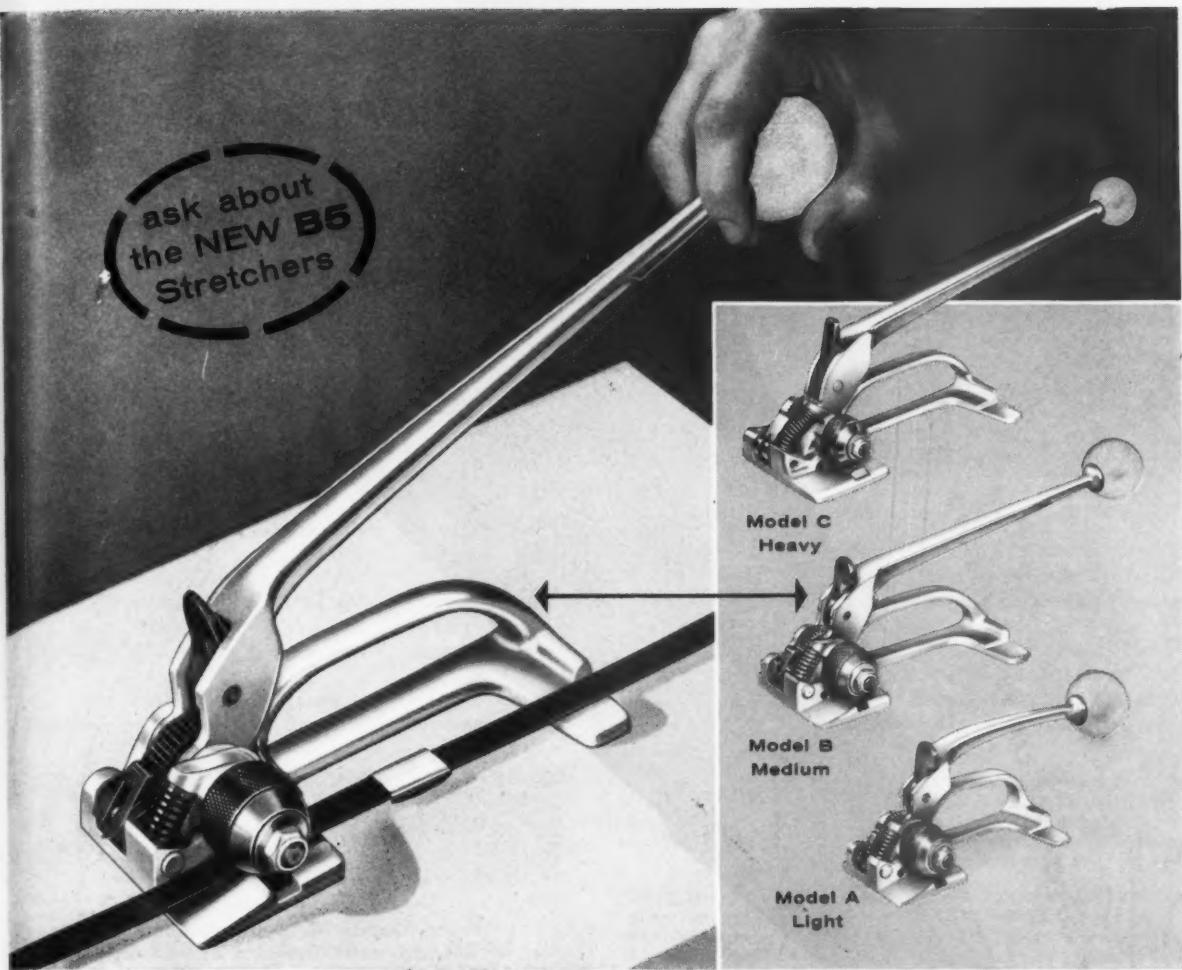
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Ask your AIM* about the brand new B5 stretchers Acme Idea tensioning tools for steel strapping

ACME STEEL COMPANY now offers the new B5 Stretchers . . . the most versatile Idea strapping tools available to industry.

The B5 Stretchers are rugged but without excess weight and properly balanced. They can be used left or right handed, with the strapping dispenser either ahead or behind the operator for standard or reverse loop applications.

The design of the new B5 Stretchers permits fast, easy entry and alignment of the strap loop ready for tensioning. And the B5 Stretchers can be used to apply strapping in any direction, with the same ease of operation.

The arrangement of the rotary gripping dog permits continuous, unlimited take-up, quick release after strapping is tensioned. B5 handles can be positioned quickly for maximum leverage in confined areas. B5 Stretchers come in three sizes—Model A for light, Model B for medium and Model C for heavy applications.

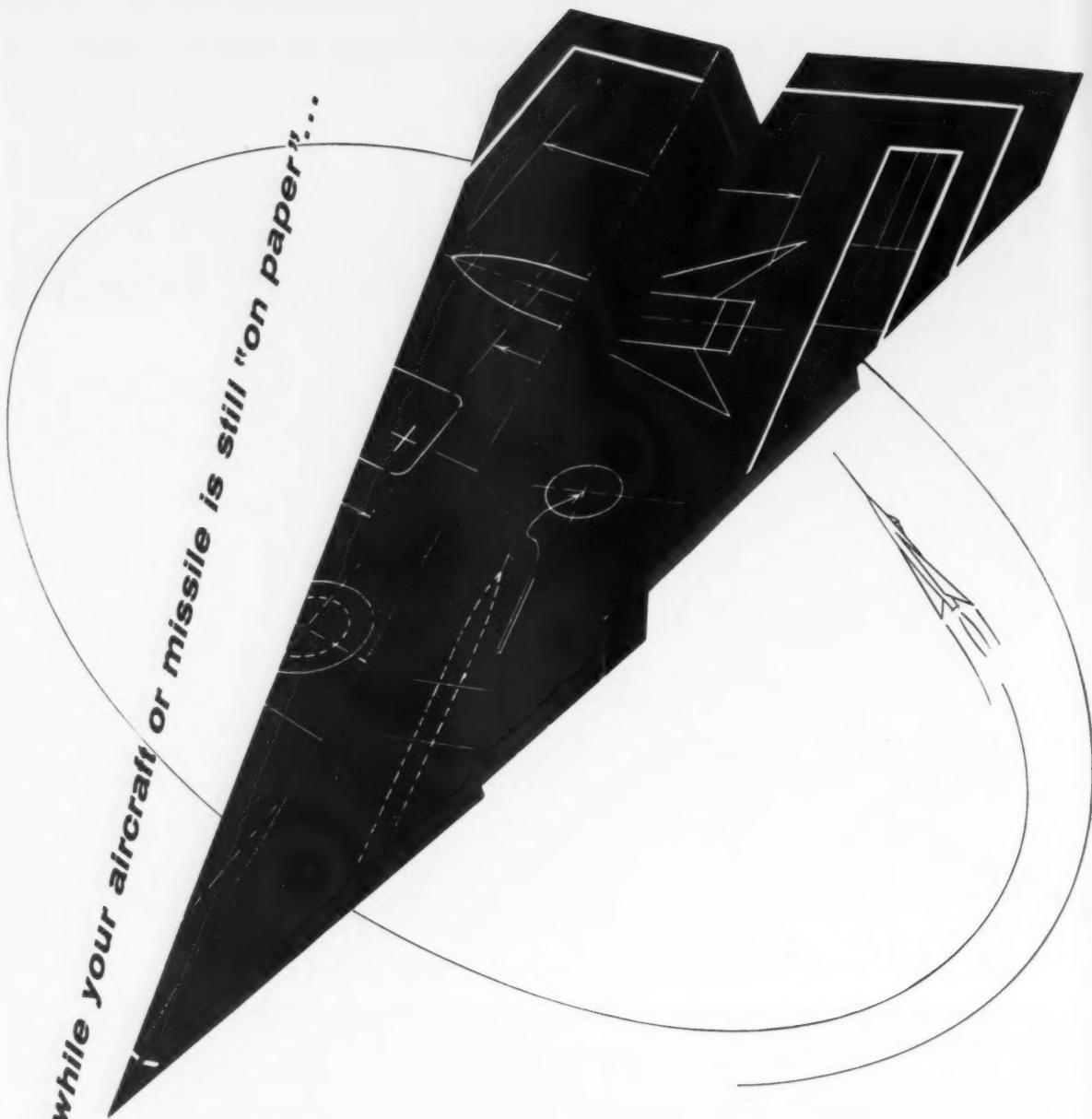
*Ask your Acme Idea Man about the new B5 Stretchers today. Contact him at the nearest Acme Steel office, or write: Dept. WCS-117, Acme Steel Products Division, Acme Steel Company, 4901 Pacific Blvd., Los Angeles 58, California. Also San Francisco, Seattle, Portland.



ACME
STEEL

STEEL STRAPPING

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WESTERN INDUSTRY — November 1957

25 manuals on fans and blowers (p. 65)

20 manuals on dust collectors (p. 68)

25 product application magazines (p. 71)

HERE ARE TODAY'S best manuals on fans and blowers . . . and dust collectors. Carefully selected by the WESTERN INDUSTRY editorial staff, the manuals contain the latest data on how these products may be of use to you.

We have analyzed these manuals and have condensed our findings in

the descriptions below. We hope our findings will lead you to the best information on these subjects. For your copy of these manuals, just circle the appropriate number on the WESTERN INDUSTRY Reader Service Postcard (p. 83).

As a bonus this month, we are extending our listing of the product ap-

plication magazines first listed in the August WI. To get on the magazine's mailing list, just circle the appropriate numbers on this month's Reader Service Postcard.

Note that the special offer for manuals and magazines listed in this month's WESTERN INDUSTRY expires on January 31, 1958.

FANS and BLOWERS

New air engineering data in 24 pages

This comprehensive bulletin covers engineering and test facilities for propeller fans, specifications, construction, maintenance and installation. Noise elimination, general ventilation problems are discussed in detail. *Aerovent Fan Co., Inc.*

... for your copy, circle No. 251

Fan for efficient performance against static pressures

Semi-pressure fans are described and illustrated in this eight-page bulletin that tells how these units will move more air at slow speeds with essentially lower horsepower requirements. Certified ratings of 7-blade fans are included. Direct-driven duct, direct connected and belt-driven duct are some of the types detailed. *Aerovent Fan Co., Inc.*

... for your copy, circle No. 252

New 4-blade, "Macheta" propeller's efficiency told

Here are facts on a direct-connected fan for all standard duct installations. Heavy-duty construction, built-in efficiency and operational economy outlined. It covers direct-connected ring fans, direct-connected panel fans and direct-connected duct fans. Pictures and brief facts are also given for other air moving products. *Aerovent Fan Co., Inc.*

... for your copy, circle No. 253

12 pages of facts on turbo-compressors

Low power costs, perfect balance and elimination of vibration, plus quiet operation are features of compressors treated in this booklet. Charts show actual performance of 5-hp. unit in relation to operating costs. Data on gas boosters, midget turbines, air filters and blast gates as well as pressure ratings of compressors included. *The Spencer Turbine Co.*

... for your copy, circle No. 254

Facts on multistage centrifugal blowers, exhausters

This 12-page manual covers blowers and exhausters built for applications which require air pressure from 1 to 9 psi. or vacuum from 2 to 12 in. of mercury. Designed to deliver air at a uniform pressure, they are simple of design, offer clues to valuable saving in replacing the use of high pressure air through throttling or reducing valves. *Hoffman Machinery Co.*

... for your copy, circle No. 255

New-type fan simplifies production of induced draft

This illustrated catalog describes a highly efficient induced draft fan, breeching and evacuating stack, all combined in one integral unit. Two revolutionary type fan wheels are used. *Prat-Daniel Corp.*

... for your copy, circle No. 256

Oil, gas-fired warm air heaters spell packaged heating

How to get heated air in all directions without the danger of combustion products entering the warm air stream is described in this 8-page brochure for industry. These units can be furnished with either an oil or gas burner, or a combination of each. *Thermobloc Division, Prat-Daniel Corp.* ... for your copy, circle No. 257

Planning your ventilating system

Design and engineering on a line of ventilating fans and blowers are outlined in a 32-page bulletin that includes table showing air change requirements of various types of rooms and areas, use of ducts, special conditions governing fan selection, design and operation of blowers. *Ilg Electric Ventilating Co.*

... for your copy, circle No. 258

Information on air circulators; exhaust and ceiling fans

Fans for ceiling, wall, floor or counter mounting are detailed in several data sheets with charts, dimensions and photos. There are facts on why these new fans are particularly suitable for commercial and industrial installations and deliver large air volume at little operating speed. *Emerson Electric Mfg. Co.*

... for your copy, circle No. 259

Details on specialized aluminum multi-blade fans

Cooling tower fans with blades ranging up to 12 in. number and from 4 to 22 ft. in diameter, and their many operational advantages, are detailed in this eight-page, illustrated catalog. Harmful results of excess vibration are told as revealed in a survey program. Manual includes catalog on corrosion hazards. *The Marley Co.*

... for your copy, circle No. 260

Three detailed manuals about industrial fans

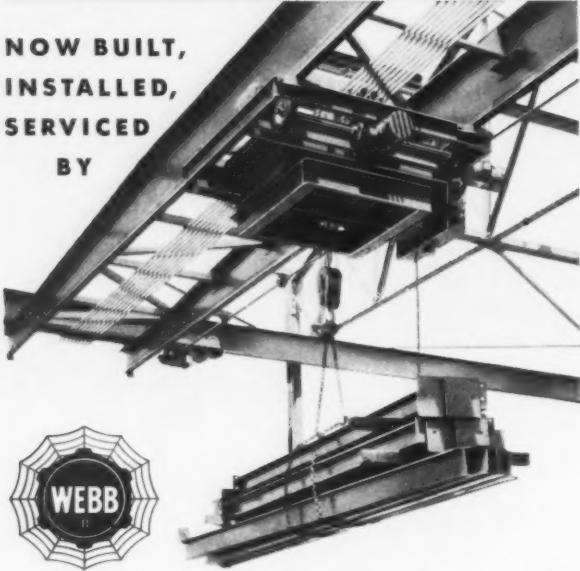
Here are three booklets from a leading fan builder. One is a 72-page, illustrated, two-color catalog describing a new series of fans that provide complete handling of industrial material and air. Such important considerations as wheels, optional construction and special design are discussed and the comprehensive book has 50 pages of ratings. Another catalog, 36 pages, describes axial fans for ventilation, process air supply and process air recirculation. In a third two-color, 92-page catalog, adjustable discharge fans, V-belt and direct drive are covered. *American Blower Corp.*

... for your copy, circle No. 261



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KNOW-HOW NOTEBOOK . . . Part 2

25 BEST MANUALS ON FANS and BLOWERS . . . continued

Cooling tower know-how

Here is a 24-page booklet which covers the packaged cooling tower field explicitly, detailing both mechanical and atmospheric towers with normal ratings up to 60 tons. Tips on installation and maintenance of cooling towers, how to operate wiring, and many other valuable facts are given, along with charts and pictures. *The Marley Co.*

... for your copy, circle No. 262

Multiple data package on fans and cooling equipment

A service manual for air handling and conditioning equipment, profusely illustrated and charted, 68 pages long, is available. Two other catalogs announce a series of new fan principles, with interchangeable wheels, sizes ranging from 11 through 60 in., and present general information on pressure fans. *Clarage Fan Co.*

... for your copy, circle No. 263

Picture evidence about heavy-duty propeller fans

These two bulletins offer scores of pictures on power roof ventilators, 1,000 through 250,000 cfm. Rugged construction for heavy snow loads, hurricane force winds and corrosive atmosphere, is described. Fans for recirculating gases in refractory kilns, roof ventilators, fresh air intake hoods, are fully covered. *Buffalo Forge Co.*

... for your copy, circle No. 264

Portable ventilators, exhausters, and heat-killers

This 20-page catalog of portable ventilators and man-cooling fans is vividly illustrated in two colors, carries drawing of suction equipment, together with capacity tables. Also available is a reprint of an enlightening article entitled "On-the-spot Fume Control." *Coppus Engineering Corp.*

... for your copy, circle No. 265

12-page manual on roof ventilators

Centrifugal roof ventilators, their features and construction details, ratings and performance data are included in a 12-page catalog. This data includes both the belt drive and direct drive roof ventilators. Recommended specifications are also discussed. *The Peerless Electric Co.*

... for your copy, circle No. 266

Valuable data on compressors, pumps and blowers

Three illustrated manuals filled with specifications, charts and technical data describe this company's equipment for meeting all air and gas handling requirements. The first, an eight-page booklet, outlines design and operational advantages of single-stage turbo blowers of various types. The second deals with rotary sliding vane compressors and vacuum pumps, and both centrifugal and axial stage blowers. Application pictures showing multi-stage type V blowers in diverse installations are featured in the third offering, which includes cross section, and cutaway drawings plus details on construction and operation. *Allis-Chalmers Mfg. Co.*

... for your copy, circle No. 267

Vaneaxial fans for efficient air circulation

Listing nearly 30 large scale operations and as many direct applications in which Axivane fans are used, this 16-page manual goes on to explain the basic principles in their design, compares this type to centrifugal fans, and pictures a dozen typical installations in many varied industries. Three pages are devoted to specification tables for different models. *Joy Manufacturing Co.*

... for your copy, circle No. 268

Unit heaters for steam and hot water

Thirty-pages of comprehensive data describe five popular sizes of horizontal delivery and power-flow types of unit heaters. Features include special models for hot water, a velocity generator which increases heat throw, non-ferrous condenser and safety fan guard. There are facts on many models to choose from and a liberal display of pressure tables is included. *Modine Manufacturing Co.*

... for your copy, circle No. 269

Getting the exact amount of clean dry air or gas

If your gas or air needs lie within the range from $\frac{1}{2}$ to 7 lb. pressure, from $\frac{1}{2}$ to 500 hp., in either single or multi-stage design — this catalog on blowers will interest you. Exhauster and blower capacities tables are included along with photographs and drawings. *Lamson Corporation.*

... for your copy, circle No. 270



Santa Cruz Veneer Products Co. uses 18 and 19-gauge USS Stapling Wire for stitching bushel baskets (large picture). At peak production, they turn out some 15,000 of these fresh pea shipping containers a day. In the bottom photograph, 16-gauge USS Wire is being attached to basket covers to act as loop fasteners. Wire for these jobs must be produced to exact specifications. If the quality varies even slightly, these machines will know the difference.



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KNOW-HOW NOTEBOOK

25 BEST MANUALS ON FANS and BLOWERS ... continued

Service manual for air handling products

A 68-page manual designed to help you get the utmost in performance from Clarge air handling and conditioning equipment is one of three publications offered by this firm. Its pages are packed with tips on installation, operation, maintenance, etc., with pictures and diagrams of units and their components. A second booklet deals with models of pressure fans and is illustrated with performance curves, product pictures and specification tables. Comprehensive data on XL fans for industrial air and material handling appears in the third helpful manual. *Clarge Fan Co.*

... for your copy, circle No. 271

Catalog, price list for blowers and pumps

Motor driven pressure and volume blowers, pump and tank units, condensate disposal units, centrifugal pumps and sump pumps are discussed in this 17-page catalog. Full descriptions of all products are given, along with pictures and accompanying price lists. *Sutton Manufacturing Co.* ... for your copy, circle No. 272

50-page volume about mine ventilation

This 50-page, illustrated catalog embraces types and sizes of fans and blowers to meet every mining condition as well as fans for industrial applications. How the challenges of properly directing air through a mine are met is a fascinating topic well covered in this publication. Many application pictures, charts and tables are included. *Jeffrey Mfg. Co.* ... for your copy, circle No. 273

Technical data on venting units for multiple uses

Here are two catalogues. In one you will find complete performance tables and dimensions for all sizes, both single and double inlet fans. The second offers a series of performance tables on both the direct and the performance-belt driven units. The two texts cover more than 100 pages, combined. *Fan Master Corp.*

... for your copy, circle No. 274

Information on rotary positive blowers

Included in this 8-page bulletin are selection and dimension tables, performance data, application information and illustrations. Eighteen standard sizes are listed, with accessory equipment. These blowers deliver four volumes of air every revolution of the drive shaft. Flow of air is without objectionable pulsations at the normal speeds of modern blowers. *Roots-Connersville Blower.*

... for your copy, circle No. 275

Forward and backward curved fans—take your choice

Here are two of the most comprehensive bulletins to date on air moving equipment, 72 pages each. One covers a dozen subjects in the field and includes some 45 pages of performance tables on backward inclined fans. The other publication is a similar presentation on forward curved fans for hundreds of air-moving applications. *The Trane Co.* ... for your copy, circle No. 276

20 BEST MANUALS ON DUST COLLECTORS

Valuable data on centrifugal dust collectors

This up-to-date bulletin outlines dust problems in industry, offering many helpful solutions. Advantages of new centrifugal dust collectors lend themselves particularly to industries whose operations involve buffing, calcining, cleaning, grinding, mixing, roasting, etc. Latest machine embraces principle of the cyclone. Profusely illustrated with photographs and charts; includes laboratory reports, representative performance, and suggestions for increasing efficiency of production. *American Blower Corp.*

... for your copy, circle No. 277

New and smaller Microdyne dust collector story told

A wet type dust collector 1/10th to 1/20th the size of any other types is described in this four-page brochure. Exposed sections of the device are clearly outlined to emphasize the quality of performance, which is measured by micron count. According to the manufacturer, this dust collector picks up 80% of all particles by count. *Joy Mfg. Co.*

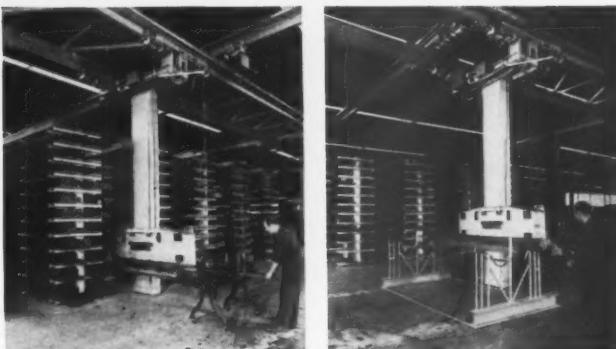
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HOW'S THIS FOR STEEL STORAGE!

American MonoRail engineers, working with Hawkridge Brothers Company, designed this system for storing bars, rods and other long steel shapes.

Note the extremely narrow aisles and maximum height of racks. Bars and rods, 20-22 feet long, are placed in pans 18 feet long. The American MonoRail Stacker transfers these pans to either side of an aisle for storage.



MonoRail Stacker forks support bar in saw. Saw with extension rolls to any convenient spot in the warehouse.

American MonoRail Stacker lowers a banded bundle of bars over prongs which ingeniously splits bands, lets bars roll into trough for pick-up in a tray.

Photos: Courtesy of Hawkridge Brothers Company, Waterbury, Conn.

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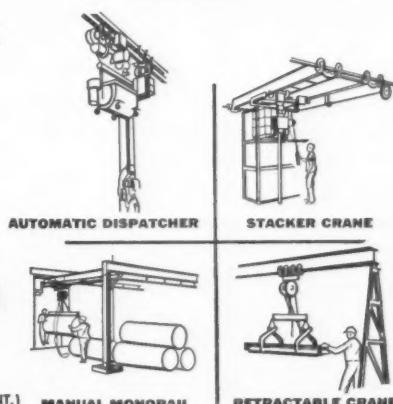
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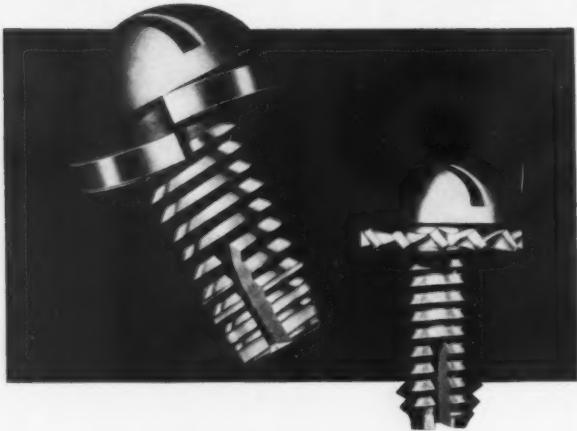
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70

KNOW-HOW NOTEBOOK

Part 2

20 BEST MANUALS ON DUST COLLECTORS . . . continued

Dust and fume control pioneers

Several types of dust collectors, including an electrical precipitator design and a cyclonic separator which centrifugally expels the suspended particles from the gas stream, are discussed in this 10-page bulletin. Spray drying by a specialized method also is covered in terms of less expensive procedures. *Western Precipitation Corp.* . . . for your copy, circle No. 279

A score of dust control articles presented

Elimination of asbestos hazards, how Kellogg collects \$1,400 in "pay" dust per day, dust control at Thomas Edison—these are some of the subjects covered in this generously illustrated magazine. One section tells how high heat costs are lowered in one plant, while still another describes salvage profits plus low operating costs. *Pangborn Corp.* . . . for your copy, circle No. 280

How synthetic fabrics add to dust collecting efficiency

A 24-page brochure outlines with text and pictures a type of dust collector which now is operating in such fields as carbon black production, milling and sewage disposal plants. This story also tells of ventilating for a paint factory as well as a sugar processing mill. *Wheelabrator Corp.* . . . for your copy, circle No. 281

Dust control units with high capacity, adaptability

Three four-page pamphlets illustrate this company's two dust collectors and the blow-pipe elbow used with them. One type offers maximum capacity with minimum space and maintenance. The other self-contained unit features high suction and air volume capacity. Of particular advantage are the one-piece elbows that offer durability greatly superior to the most carefully produced hand-made elbow. *Kirk & Blum Manufacturing Co.* . . . for your copy, circle No. 282

Practical dust control systems as a paying investment

Detailed information on dust control with basic principles explained is offered in this 30-page, lavishly illustrated bulletin which stresses easy and practical solutions to almost all dust control problems. Discusses hazards, filters, control systems and shows way to greater efficiency, more profits. Four other bulletins detail unit dust filters, economy dust filters, and tell about Dynaclone, which eliminates mechanical shaking. *W. W. Sly Manufacturing Co.* . . . for your copy, circle No. 283

"How much are you paying for dust?"

. . . asks one of the three catalogues and brochures put out by this company, manufacturer of dust collectors that stress economy, safety. A second 16-page catalog deals with basic types—for gritty dust, bulky or sticky dust, and for fumes and gases—and is illustrated with product and application photographs, specs and performance charts. Third booklet gives concrete illustrations to help solve that dusty problem through use of unitized dust collectors. *Torit Mfg. Co.* . . . for your copy, circle No. 284

Heavy duty vacuum cleaners for dust control

A 17-page booklet illustrating various types of this company's vacuum cleaners shows that almost every one provides limitless advantages in dust control as well as heavy cleaning. Sturdy rugged construction, power, economy are design advantages cited. Specifications for all models are listed. *Invincible Vacuum Cleaner Mfg. Co.* . . . for your copy, circle No. 285

Simplification with Hydro-Whirl dust collectors

This manual describes the Hydro-Whirl wet collector which simplifies collection methods, dispenses with spray nozzles, screens, other parts subject to clogging. Application photos of buffing, grinding, other applications show effectiveness, serviceability. Book has 16 pages of diagrams, charts, text. *Peters-Dalton, Inc.* . . . for your copy, circle No. 286

Article reprint gives facts, figures on fog filter

This reprint from the Georgia Institute of Technology describes efficacy of fog filter for removing dusts, fumes, gases and mists from the air. It explains that while fog filter has been found to be limited in use, its satisfactory performance under certain engineering conditions is established. *The R. C. Mahon Co.* . . . for your copy, circle No. 287

KNOW-HOW NOTEBOOK Part 2

20 BEST DUST COLLECTOR MANUALS . . . continued

Facts on reverse jet filtering

Two well written, illustrated and diagrammed booklets discuss the cyclonic dust separator and the reverse jet dust filter. The first, 12 pages long, describes the dust separator with its new high efficiency, low cost, rugged construction. In 28 pages the second gives details of the reverse jet dust filter which has been tested in more than 700 installations. Benefits include self-adjusting blow rings, one filter to handle separate dust systems, savings of up to 75% on erection costs. *The Day Co.*

... for your copy, circle No. 288

Dust, fume control service for foundries

How the "wet method" of dust and fume control demonstrates its efficiency is described in a 28-page bulletin detailing equipment for the foundry industry and handsomely illustrated, with graphic diagrams and spec sheets. Another 15-page booklet describes, for really big jobs, the giant Uni-flo shakeout booth with compensating air, and illustrates hoods for all purposes. *Schneible Co.*

... for your copy, circle No. 289

10 advantages of vacuum cleaning dust control

Brief, to-the-point bulletin, seven pages, tells value of this vacuum cleaning system which provides highest standards of cleaning efficiency. Among the illustrated industrial and conveying jobs: metal shot is rapidly recovered, textile machines run smoothly, dust and scale are scraped and removed prior to painting. Complete selection of tools, accessories included. *US Hoffman Machinery Corp.*

... for your copy, circle No. 290

Data on tubular dust collectors

A 12-page breakdown on the 6P Collector tube which fulfills five major objectives important to designers of steam generators in the application of a dust collector. Charts give micron efficiency ratings. *Prat-Daniel Corporation.*

... for your copy, circle No. 291

A central vacuum cleaning system in industry

This vacuuming system is an industrial and commercial cleaning plan which picks up dirt, dust and small particles much as a house vacuum performs. Passes them through a stationary piping system to one or several collector-separator tanks. Twenty pages tell its uses, what materials it will handle, and who uses it. *Landson Corp., Billmyre Blower Division.*

... for your copy, circle No. 292

Data on recirculating water-type dust collectors

This advanced system of cleaning dust-laden air utilizes multi-curtains of water to wash contaminants from the air stream. The unit is built in 5,000, 7,500, 10,000, 15,000, and 20,000 cfm. and even greater capacities. It is described in a 22-page manual with charts and illustrations. *Newcomb-Detroit Company.*

... for your copy, circle No. 294

25 BEST PRODUCT APPLICATION MAGAZINES

Steel, pipe and tubing products and methods

The Drake Digest—Bi-monthly, features products and services of Drake firm's customers, activities of the company and its personnel, as well as general interest feature articles. Case history pictures show product applications. *Drake Steel Supply Co.*

... for your copy, circle No. 295

Current developments in the aluminum field

The Aluminum Bulletin—16-page quarterly about current developments in the industry, with feature articles on new products and unusual applications, news briefs, editorial page. *The Aluminum Association.*

... for your copy, circle No. 296

Case histories of metalworking problems

Copper Alloy Bulletin—Monthly news for users of brass and copper-base alloys, tells of recent developments in metalworking, contains valuable data and tables and presents case history material on how various industry problems have been met and solved. *Bridgeport Brass Co.*

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KNOW-HOW NOTEBOOK

25 BEST PRODUCT APPLICATION MANUALS . . . continued

Using hydrogen peroxide and peroxygen compounds

Becco Echo—Quarterly review about applications of hydrogen peroxide and other peroxygen compounds builds feature stories around experiences of Becco customers, includes technical articles concerning use of these chemicals. *Becco Chemical Div., Food Machinery and Chemical Corp.* . . . for your copy, circle No. 298

All about friction and fluid drives

Production Road—Quarterly, 24-page magazine focused on application of friction and fluid drives in industry, presenting pertinent stories on construction, industrial, marine, agricultural and other fields. Recent issue covered three decades of progress for heavy industrial equipment. *Twin Disc Clutch Co.* . . . for your copy, circle No. 299

Heat treating, testing and control equipment

Pacific Scientific News—Semi-technical house organ published six times yearly, with content ranging from general interest items in heat treating field, case histories of the company's furnaces, to news of varied testing and control equipment distributed by the firm. *Pacific Scientific Co.* . . . for your copy, circle No. 300

Aircraft accessories and control equipment

Pacific Scientific Aero News—Companion publication to the above, published quarterly, concerned with aircraft accessories and control equipment produced by the company and various firms it represents in the West. *Pacific Scientific Co.* . . . for your copy, circle No. 301

Aids to insulating underground pipes

Pipe Insulation News—Quarterly publication with articles and stories about problems of insulating underground hot pipes, citing uses of Gilsulate for such work. *Gilsulate Div., American Gilsonite Co.* . . . for your copy, circle No. 302

Pictures tell story of rigidized metals

Rigid-Tex Metal News—Quarterly product bulletins with pictures and descriptions showing uses of rigidized metals, together with close-up of three-dimensional textured Rigid-Tex metal pattern used in each instance. *Rigidized Metals Corp.*

. . . for your copy, circle No. 303

All about lubrication for industry

Lubrication Newsletter—Recent issue contains technical paper on measurement of surface temperatures under sliding friction by a newly developed thin thermocouple technique, with outline of problems existent in lubricant effectiveness evaluation. Tables, pictures, charts, and bibliography included. *The Alpha Molykote Corp.*

. . . for your copy, circle No. 304

Review of plastic products and processes

The Plastics Weldor and Fabricator—Covers five categories—components, products, fabrications, new literature and facilities and services. Typical issue reviews firm's 26 products, processes made available during past year, with request coupon for further data. Products include spray units, beakers, tubing, various-sized containers. *American Agile Corp.* . . . for your copy, circle No. 305

Lead and its widely varied applications

Lead—Quarterly, deals with both familiar and original uses of lead in the industrial world today. Recent issue describes use in nuclear reactor, highway and building construction, for bottle labels. Contains bibliography of up-to-date technical bulletins available through this association. *Lead Industries Association.*

. . . for your copy, circle No. 306

Facts on radiotelephones, transmitters, etc.

Kaar Communicator—Monthly fact sheet reports interesting uses and ideas for the industrial mobile telephone, similar equipment made by the firm. Gives tips and data as to FCC rules, . . . *Kaar Engineering Corp.* . . . for your copy, circle No. 307

Engineering, maintenance tips for rotary pumps

Viking Vacuum—Quarterly magazine with articles on application of rotary pumps, case histories, plus valuable engineering and maintenance information. Many pictures, drawings and tables, plus sprinkling of humorous bits. *Viking Pump Co.*

. . . for your copy, circle No. 308

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WESTERN INDUSTRY — November 1957

Multiple uses for food machinery and chemicals

FMC Progress—Quarterly publication that covers multiple fields in which company's machinery and chemicals are used by customers. Many excellent color photographs and illustrations. Recent issue features articles on carpets, pre-stressed concrete, frozen fruit, wood pulp, soft drinks, forest preservation. *Food Machinery and Chemical Corp.* . . . for your copy, circle No. 309

Latest trends in air-cooled engine usage

Enginews—Monthly, 4 pages, presents facts and pictures relating to applications of heavy-duty air-cooled engines. Humor section. *Wisconsin Motor Corp.* . . . for your copy, circle No. 310

Monthly digest of transportation activities

Transportation News—Condensed facts about what's going on in the transportation industry each month. Slanted for receivers, shippers of freight, gives many valuable tips and facts. *Pacific Intermountain Express*. . . . for your copy, circle No. 311

Family journal of editorials, current topics

The Houghton Line—Described by its editor as "for people who like to do their own thinking," pocket-sized book combines provocative editorials, philosophy and humor with current topics and articles related to the firm's line—oils, leathers, metalworking products. *E. F. Houghton & Co.* . . . for your copy, circle No. 312

Tips and trends in fan and blower field

Peerless Fan and Blower News—Bi-monthly 4-pager with information of value to users of industrial and commercial fans and blowers. General interest articles, humorous bits. *Fan and Blower Div., Peerless Electric Co.* . . . for your copy, circle No. 313

News about fastening by resistance wedging welding

Ohio Weld Fasteners News—Published 4-6 times yearly, describes interesting applications of weld fasteners, presents welding data of help to engineers, production men. *The Ohio Nut & Bolt Co.* . . . for your copy, circle No. 314

All about electric generating plants

Power Points Digest—Quarterly, pocket-sized book filled with pictures, text on gasoline and diesel plants, generators and air-cooled engines used for diverse installations. *D. W. Onan & Sons Inc.* . . . for your copy, circle No. 315

Data for producers, users of nickel, and nickel alloys

Inco Nickel Topics—Monthly for engineers, others interested in specifying materials of construction. Contains performance data, photos for various applications of nickel-containing alloys, nickel electroplating and ductile cast irons in all industries. *The International Nickel Co.* . . . for your copy, circle No. 316

Zirconium—its properties and production

More ZR Facts—Bimonthly with specific information on the metal's corrosion resistance; nuclear, physical and chemical properties, analytical methods and fabrication techniques. *The Carborundum Metals Co., Div. of the Carborundum Co.* . . . for your copy, circle No. 317

Paint, glass and related products

Pittsburgh Products—Bimonthly, non-technical, excellent color photographs and articles that highlight the firm's many paint, glass and other products. Slanted for the architecture, building and industrial maintenance fields. *Pittsburgh Plate Glass Co.* . . . for your copy, circle No. 318

Oil in the world today

Seventy Six—Monthly, with features covering topics such as research development or projects within the company, human interest stories, current events, editorials, news of company departments and personnel. *Union Oil Co. of America*. . . . for your copy, circle No. 319

Engineering data on gears, tractors

Newsletter (with Contact)—*Gear News*—Quarterly newsletter of personnel and company data, printed by the parent company in England, incorporates a supplement, *Contact*, with valuable engineering information on new methods and projects of the firm and such subjects as traction control, steam turbines, gears and tractors. *Gear News* is a bi-monthly from the firm's San Leandro, Calif., branch, with news about activities there. *David Brown, Ltd.* . . . for your copy, circle No. 320

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43

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73

HELPFUL LITERATURE

for the West's plant
operating executives

FOR YOUR FREE COPIES, circle appropriate key numbers on postcard, page 83

Metallic lubrication— what it can do for you

Better lubrication is the subject of this folder with a "touch-test" feature. Diagrams and text demonstrate the advantages of metallic lubrication, a process which smooths out the roughness of metal surfaces before lubrication and is said to cut lubricating costs by 50%. *Imperial Oil and Grease Co., Inc.* . . . for your copy, circle No. 151

24 pages of machine tool control know-how

For all types of machine tool users, this 24-page bulletin is illustrated with photographs of continuous and intermittent positioning systems, hydraulic tracers, numerical controls and programming consoles. The text also covers accessory units such as hydraulic cylinders, power units, hydraulic milling, spindles, coolers and mounting brackets, profile, contour and straight line machine tool controls. *True-Trace Sales Corp.*

. . . for your copy, circle No. 152

A trouble-shooter for your hydraulic systems

The hydrauliscope, an electronic analyzer utilizing oscilloscopic principles to measure pressure activity in hydraulic systems, is the subject of this four-page bulletin giving full technical data as well as a description of the unit. Used to make accurate checks on the efficiency of hydraulic systems, and determine smoothness of hydraulic pressure, the hydrauliscope can also detect any undesirable shock or surge in the circuit. Pictures illustrate typical hydrauliscope operations and a list of accessories and parts is also given. *Aeroquip Corp.*

. . . for your copy, circle No. 153

Facts on low-cost spring-pin fasteners

Cost saving applications of spring-pins in a wide variety of product assemblies are illustrated in this four-page folder. The fasteners—slotted, tubular pins that lock by spring action when driven into standard commercial holes—are claimed by the manufacturer to do away with tapping, reaming, peening and milling operations. The pins, used in motion picture projectors, fishing reels, household appliances, phonographs, conveyor and gear assemblies are pictured. *Standard Pressed Steel Co.*

. . . for your copy, circle No. 154

Fingertip facts on Liftronics for industry

Liftronics—the scientific analysis of lift problems—is the subject explored in this 16-page publication filled with action photographs. A dozen different applications of hydraulic lifts are illustrated and a double-page cutaway emphasizes basic construction details. The book includes specifications and other data on tilting loading dock truck lifts and ramps; three types of cross-over bridges; multi-purpose, single-post and two-post platform lifts. *The Wayne Pump Co.*

. . . for your copy, circle No. 155

Digest of brake and clutch information

Electric brakes, clutches and clutch-brakes are the subjects of this eight-page, illustrated catalog digest WEB 6292. Torque build-up and control, rapid heat dissipation, simplicity of design and low power requirements are presented in concise, easily-read style. *Warner Electric Brake & Clutch Co.*

. . . for your copy, circle No. 156

Chemical processes in metal-working plants

Details of 57 chemical processes are presented to you in this 16-page manual, with photographs and nine reference charts applicable to cleaning, phosphating, conversion coating, protective coating, paint and carbon removing, rust prevention, descaling, electroplating, inspecting, processing aluminum and a variety of other uses. Charts deal with conversion factors, decimal equivalents, measuring surface areas, tank capacities, Fahrenheit-Centigrade conversion, phosphating reference, drop in air pressure, energy required to heat water and properties of saturated steam. *Turco Products, Inc.*

. . . for your copy, circle No. 157

28-page bulletin describes two stainless steels

Properties and applications of 17-4 PH and 17-7 PH stainless steels are described in this 28-page booklet, which also details fabricating procedures for these precipitation-hardening alloys. Sheet, strip and plate applications are outlined, as well as heat treatment, drawing and forming, welding and pickling and cleaning. Available forms and sizes in stainless bar and wire are also listed. *Armco Steel Corp.* . . . for your copy, circle No. 158

Service report on powdered acid uses

Details on the properties and uses of Drycid, a powdered acid scale and rust remover, are described in this two-page service report that stresses the advantages of shipping, storing and handling the product. Recommended solution concentrations and application methods are given. *Oakite Products, Inc.*

. . . for your copy, circle No. 159

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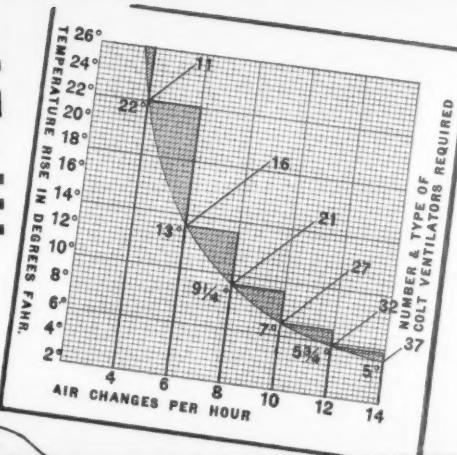
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This customized, *curved* chart shows at a glance the ventilation system that is *right for your plant*. Another Colt "first."



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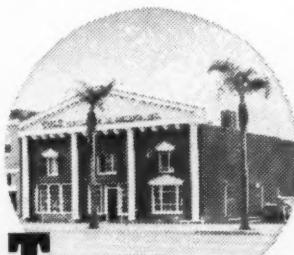
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Pictured above are some of the 27 CO/2046 Colt Clear-Opening Adjustable Louver Ventilators installed in the sawtooth roof at Nardon Manufacturing Company. Installation was carried out without affecting working operations by simply removing panes of glass and inserting ventilators in their place.

The customized chart illustrated at top was used to determine the most efficient and economical number of ventilators to be used. Since each

building presents a different ventilation problem, Colt has devised its unique customized chart, based on theoretical calculations plus Colt's carefully kept records of more than 32,500 installations, to produce the most economical ventilation system and to show exactly what it will do in a building.

Don't settle for a hit or miss ventilation system! You know before you buy that you are getting your money's worth with Colt . . . and Colt has a wide range of ventilators to suit every need.



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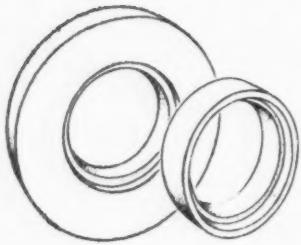
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*Write for Free Technical Manual
giving full details of
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Jim Lewis, of W. Lewis Sales Co., Cleveland, typical Bay State distributor, says, "I try to figure out how I'd meet my customers' payrolls and still make a profit. That way I get ideas I'd never have if I just concentrated on my own selling problems."



The "hole" on the right is all they throw away now.

He put one wheel to work

on two machines!

Ed and John Menhart, of Cleveland's Micro-Plane, Inc., were well satisfied with the 24" x 4" x 12" Bay State wheels on their big Hanchett horizontal surface grinder. They were the only wheels they'd found in 8 years that could handle the tremendous variety of work that went through their shop.

But . . . because surface speed dwindled as the wheels wore down, grinding efficiency naturally dropped, too. This bothered Jim Lewis, the Bay State distributor who specified the wheels, because he hates to see his customers throw away "anything but the hole" in a grinding wheel.

Lewis got together with the people in Bay State's Cleveland office and figured out a solution. At their suggestion, Micro-Plane adapted a smaller Hill-Acme surface grinder that not only put the half-used wheels efficiently and profitably to work but also substantially reduced wheel costs because they no longer had to buy wheels for the Hill-Acme. •

If you would like to supplement your engineering staff with an abrasive specialist like Jim Lewis, you'll find it well worth your while to talk to the Bay State man in your area. He's trained to find *practical, profitable* solutions to your grinding problems.



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Bay State Abrasive Products Co., Westboro, Massachusetts.

Branch Offices and Warehouses: Bristol, Conn., Chicago, Cleveland, Detroit, Pittsburgh. Distributors: All principal cities. Bay State Abrasive Products Co. (Canada) Ltd., Brantford, Ontario.

... for more details, circle No. 55 on Reader Service Postcard

WESTERN INDUSTRY — November 1957

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BAY STATE GRINDING WHEELS

are available to you through
the following Western distributors:

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Phoenix: Arizona Welding Equipment Co.,
DiEugenie Tool Center, Inc.
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Hawthorne: Sonnet Supply Co.
Los Angeles: Barker Foundry Supply Co.,
E. A. Key Co., Ladish Pacific Division,
Republic Supply Co. of California.
San Diego: Bailey Equipment Co.

San Leandro: Republic Supply Co. of
California.

Torrance: National Supply Co.

COLORADO

Cripple Creek: Union Supply Co.
Denver: Union Supply Co.

IDAHO

Parma: Transmission Products Div. of
Parma Water Lifter Co.
Pocatello: Pocatello Plumbing & Indus-
trial Supply.

Boise: Spencer Supply Co.

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Las Vegas: Inland Service & Supply Corp.,
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Carlsbad: Carlsbad Supply Co.

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Eugene: Harmer Mill & Logging Supply
Company.
Portland: Harmer Steel Products & Supply
Co., Wall-Western, Inc.

UTAH

Helper: Carbon Transfer & Supply Co.
Salt Lake City: Production Tools, Inc.

WASHINGTON

Moses Lake: Columbia Basin Machine Co.
Seattle: J. E. Haseltine & Co., Inc.
Spokane: Kilmor & Supply Co.
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Supply.

BAY STATE ABRASIVES



Bay State Abrasive
Products Co.

Westboro • Massachusetts
... for more details, circle No. 56

WESTERN INDUSTRY — November 1957

Data on large capacity hammer mills

Hammer crushers are the subject of an eight-page brochure describing special features and specifications of five different pieces of milling equipment. Illustrations show how a simple adjustment can raise the cage grate bars and how a new design prevents foreign metal entering the crusher accidentally. Operation of a heavy duty center feed crusher is described in blue-print form, with photographs of additional attachments. *Gruendler Crusher & Pulverizer Co.*

... for your copy, circle No. 160

Technical facts on wide range pulse generator

Illustrations and text describe the wide range pulse generator in this single-page bulletin. The unit produces a stable source of pulses in eight overlapping frequency ranges up to 4.5mc. Output may be a train of pulses controlled by selecting one of eight frequency ranges, or a single pulse operated by a panel pushbutton. The output pulse is either a positive or negative half sine-wave of 0.1 microsecond duration with amplitude variable from 8 to 30 volts. *Burroughs Corp.* ... for your copy, circle No. 161

Application guide for induction heating

The where's and why's of high frequency motor-generator induction heating equipment are brought to you in this manual concerning its application to low-cost brazing, annealing, deep hardening, forging, and melting. Included is a description of 960-, 3,000- and 10,000-cycle high frequency motor-generator units in sizes from 30 to 1,250 kw. *Allis-Chalmers Mfg. Co.*

... for your copy, circle No. 162

Translating blueprint data into machine positioning

Applied to vertical hole grinders and other precision tools, numerical control is an automatic means of translating blueprint data into a series of machine positions. As described in this 12-page illustrated booklet, numerical control speeds up toolroom operations, eliminates work spoilage, improves work quality, adds new precision, minimizes tooling costs and makes repeat jobs economical. Details of its operation are contained in the text and technical sketches. *Pratt & Whitney Co., Inc.*

... for your copy, circle No. 163

Double-pitch chains, sprockets described



Containing complete data on conveying and double-pitch power transmission chains, this catalog has illustrations of standard stock chain and attachments. Charts provide all pertinent information to facilitate correct selection. Chains for specialized conditions are also described. *Diamond Chain Co.* ... for your copy, circle No. 164

Plastic—low-cost answer to corrosion problems

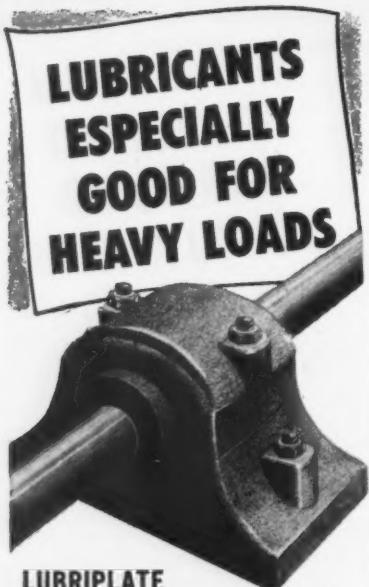
Plastic—and its many industrial uses in pipe, sheet, rod and fabricated form—is the subject of this 12-page handbook that tells about application of plastic pipe, sizes stocked, properties, advantages, cutting, drilling, filing, hot forming and hot air welding. In addition, the bulletin lists the wide range of applications proved practical by laboratory analysis. The manufacturer claims it resists corrosion against 280 solutions and gases; weighs one-sixth as much as steel; will not support combustion; is non-magnetic; imparts no taste or odors, and resists weathering. *Joseph T. Ryerson & Son, Inc.*

... for your copy, circle No. 165

Arm-chair tour of a forging plant

This 16-page handbook traces the history of the development of AmForge plants and under the tab-headings—specialization, engineering, research, versatility, ingenuity, control and economy—lists the way in which it is striving to please you, its customers. Pictures taken inside forge plants demonstrate methods of production employed, and there are illustrations of the precise type of forging carried out by this company AmForge Division, *American Brake Shoe Co.*

... for your copy, circle No. 166



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... for more details, circle No. 57

Sodium pentachlorophenate used as preservative

Application and solubility characteristics of Penco sodium pentachlorophenate are outlined in this six-page technical bulletin. It lists uses in preventing spoilage of wood, textiles, adhesives, starch, leather, oils, paints and protein material. The bulletin recommends applications, details solutions required in various situations and analyzes composition of the preservative. *Pennsalt of Washington Div., Pennsalt Chemicals Corp.*

... for your copy, circle No. 167

Catalog sheet on V-belt to reduce noise, vibration

The reduction of vibration and noise by absorbing it before it reaches the machine is the subject of this data sheet which explains how the Vibrasorb V-belt can be used for air conditioning units, forced air furnaces, window and attic fans and other belt driven appliances. *B. F. Goodrich Industrial Products Co.*

... for your copy, circle No. 168

Data on 2-in. diameter roller conveyor

Illustrated with photographs and drawings, this four-page manual details information on a 2-in. diameter gravity conveyor for medium duty use in virtually every industry handling packaged goods. Construction features, rollers, frames, straight and curved sections, as well as accessories and specifications, are included in the bulletin. *The Rapid-Standard Co., Inc.*

... for your copy, circle No. 169

All-steel building with pre-engineered sections

This eight-page brochure describes an all-steel standard building for industrial sites, designed in pre-engi-

nereered sections for swift erection. Available widths range from 32 to 48 ft. and heights reach 12, 14 or 16 ft. Because of its "erector set" construction, length is limited only by site restrictions according to the manufacturer. The brochure describes the application of the standard building in such industrial fields as manufacturing, petroleum and transportation. *Truscon Steel Div., Republic Steel Corp.*

... for your copy, circle No. 170

Selection data for geared flexible couplings

This 12-page manual gives details on the application and selection of geared flexible couplings with maximum bores up to 7 in. and ratings from 2½ to 572 hp. per 100 rpm. Housing halves are arranged for one-tool assembly and the design provides for reasonable parallel and angular misalignment resulting in minimum backlash. Describes four basic applications in ten sizes—standard, spacer, mill motor and single engagement couplings. Packaged components come in bore sizes up to 2½ in. *Link-Belt Co.*

... for your copy, circle No. 171

Guidebook to die sets and bolster plates

Special die sets and bolster plates are described in this 16-page illustrated booklet which includes ordering data, dimensional charts, etc., for all-steel die sets, cast die sets and extras. *E. W. Bliss Co.*

... for your copy, circle No. 172

Functions of accumulators on industrial lift trucks

Functions of an accumulator in the hydraulic system of an industrial lift truck are described in this bulletin that tells how these devices have been found to reduce shock impact to the load and lifting mechanism by as much as one-half when trucks are used over rough terrain. *Yale Materials Div., Yale & Towne Manufacturing Co.*

... for your copy, circle No. 173

Aspects of automation in the process industries

Written in non-technical language, this 16-page illustrated brochure clarifies broader aspects of automation and indicates some of the procedures found useful for streamlining of production in process industries. *Patterson-Emerson-Comstock, Inc.*

... for your copy, circle No. 174



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... for more details, circle No. 58

How to use Plexiglas in replacement glazing

If frequent window breakage is one of your problems, you'll be interested in an attractive 12-page manual that presents advantages of the acrylic plastic, Plexiglas, for replacement glazing of windows, skylights, door and partitions. You'll find detailed installation instructions with cross sectional drawings, data about sheet sizes and thicknesses and facts on properties of Plexiglas related to glazing, such as resistance to breakage and chemicals, outdoor stability, thermal expansion and contraction, etc. *Rohm & Haas Co., Plastics Dept.*

... for your copy, circle No. 175

Selection guide for carbon steel mechanical tubing

Directed at production and design engineers is this eight-page folder explaining the advantages and types of electric resistance welded mechanical tubing. It gives data on mechanical properties and lists the various size tolerances to which the tubing is normally produced. *The Babcock and Wilcox Co.*

... for your copy, circle No. 176

Bulletin describes power and lighting cable

Data on the Type RR Cable is contained in this four-page bulletin which gives technical characteristics of the installations and sheaths. It describes uses of rubber base insulations including Trizone, Type RHW and Type RH-RW, with trioprene, a flexible outer covering. *Triangle Conduit & Cable Co.* ... for your copy, circle No. 177

Four manuals on flexible tubing, ducts and hose

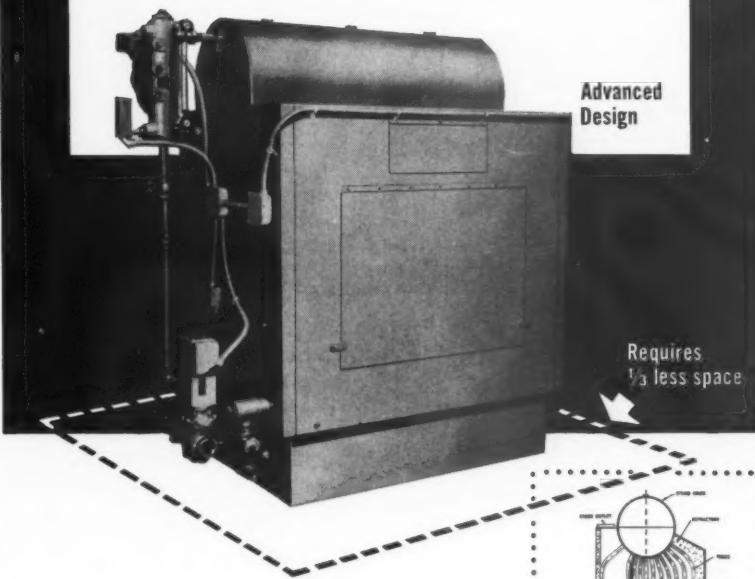
Construction features, specifications, installation tips, application pictures and other valuable data about this firm's flexible tubing products are presented in four publications, each devoted to a specific type. One covers Thermaflex, a flexible ducting designed for low and high-pressure air-conditioning systems; another, Flexflyte for air handling, fume removal, dust collection and material handling. An eight-page pamphlet features an application selector chart for versatile Spiratube ducting, and a data sheet tells all the facts about Vac-U-Flex, industrial vacuum cleaner hose. *Flexible Tubing Corp.*

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Cut your fuel bills as much as a third... maintenance 50%

with the New

Hercules Boiler



Most powerful and economical boiler for its size ever built!

The high-efficiency Hercules is designed with an exclusive vertical bent-tube construction which guarantees positive circulation and unprecedented heat transfer.

Hercules units use $\frac{1}{3}$ less space than traditional boilers of equal capacity. Light in weight, they come completely packaged ready to hook up, for either indoors or outdoors. They do not require special mounting base.

Available in sizes from 5 to 1000 h.p. Hercules conforms to all codes.



You will sharply reduce your fuel and maintenance costs... HERE'S PROOF:

"For 20 years my electric heating bill ran \$260 a month. I installed a Hercules steam boiler and reduced it to \$85. Savings in maintenance is further reducing my costs. The Hercules is the best investment I've made since I've been in business."

John Van Bergen, President
American Electro Plating Company

Write in for the Hercules Boiler Brochure. Let us help you reduce costs.

HERCULES BOILERS
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HERCULES:

CIRCULATION IS POSITIVE
Exclusive vertical bent-tube arrangement guarantees positive controlled circulation which provides high, trouble-free efficiency.

MAINTENANCE IS SIMPLE
"chest-high" access to all sections makes inspection and clean-out quick and easy.

INSULATION CUTS COSTS
No power waste. Even after continuous operation outside skin is just pleasantly warm to the touch.

LIGHTWEIGHT, ALL-STEEL
Lighter in weight than usual, every part is engineered to highest strength factors.

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Automatically-controlled performance, night and day with 100% safety. Controls adaptable to any type fuel.

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... for more details, circle No. 60

Manuals on battery and gas-powered lift trucks

Bulletin 1317, describing the battery-powered FT-20, and Bulletin 1380 about the FGF-20 gasoline-powered fork lift truck both provide details as to frame, uprights, drive, transmission, tires, fork carriage, hydraulic system, lifting and tilting; as well as specifications concerning the capacity of each machine. Both bulletins are four-page, illustrated publications. *The Baker-Raulang Co.*

... for your copy, circle No. 179

Facts, figures on three exhaust purifier types

Exhaust purifiers are illustrated and described in this four-page folder which gives technical elimination data on three types of catalytic purifiers for engines fueled with LP gas, for 4-cycle diesel engines, and for engines operating on leaded gasoline. The literature tells how the OCM catalytic exhaust purifier eliminates 95% of carbon monoxide exhaust elements. *Oxy-Catalyst, Inc.*

... for your copy, circle No. 180

12-page manual describes Para-flex couplings

Facts on the Para-flex flexible cushion coupling are presented in this 12-page manual that explains how this coupling, by means of a rubber tire element, accommodates angular and parallel misalignment and end float, singly or in any combination. Pictures, cutaways and drawings illustrate construction and installation features of the product, which also cushions shock loads and diminishes torsional vibration. The booklet includes tables of engineering data for easy selection of couplings for many uses. *Dodge Manufacturing Corp.*

... for your copy, circle No. 181

How to plan a steel shelving layout

A solution to your shelving problems, no matter what kind, is presented in this 32-page manual about unitized steel shelving. Simplicity of design, versatility, economy and other features of the system are outlined and illustrated, along with complete details for the scores of units available to suit every shelving requirement. A page of specifications gives facts on all components and there are concise instructions for planning a layout for your plant. *Boroughs Manufacturing Co.*

... for your copy, circle No. 182

66-page volume of speed reducer data

You'll get all the facts you need for easy selection of speed reducers, plus a lot of interesting information of the subject generally, out of this comprehensive manual that deals with gearmotors, miter boxes, helical and worm gear reducers. In non-technical language, it acquaints you with basic principles, diverse uses and various models, types, sizes and ratios of reducers. To show you how to pick the right reducer, it presents nine typical, practical examples. Complete specifications, ordering information and drawings for reducers and their parts make up the major part of the book. Other features include lubrication instructions, horsepower-torque table and a speed reducer data sheet. *Eberhardt-Denver Plant.*

... for your copy, circle No. 183

Data on wide-range welding blowpipe

A welding blowpipe that can weld metal thickness from 28-gage sheet to 3-in. plate is described in this eight-page booklet, fully illustrated to demonstrate applications of the blowpipe. Manufacturer claims the blowpipe can handle gas flow as low as 2 cu. ft. per hr. for precision welding, or as high as 1,500 cu. ft. per hr. for heavy heating operations. Cutting attachments that convert the pipe from welding and heating to flame cutting on all metal thicknesses up to 8 in. are also described. Complete data on the performance of welding heads and cutting nozzles is also included. *Linde Co., Div. of Union Carbide Corp.*

... for your copy, circle No. 184

Facts and figures on rotary air compressor

Nearly 40 photographs are used to illustrate this eight-page brochure about the Le Roi 600 rotary air compressor. Close-up pictures of 33 features are shown, such as an oil reservoir gage, molded steel bumper, enclosed 41-gal. fuel tank, and heavy duty welded steel underframe. Powered by a standard GM 671 diesel engine, the compressor has a high capacity of 600 cfm. compressed to 100 psi. at 1,800 rpm. Compressor reaches 110 psi. within ten secs. of start. *Le Roi Div., Westinghouse Air Brake Co.*

... for your copy, circle No. 185



EUTECTIC

Welding News

PUBLISHED BY EUTECTIC WELDING ALLOYS CORPORATION, 40-40 172 STREET, FLUSHING 58, NEW YORK, N.Y.

FAST OVERLAY FOR CAST IRON DIE— LOWER COST— LONGER SERVICE

Constant use was wearing away large cast-iron forming dies used by a Canadian railway car manufacturer. The company wanted any repair to be harder than the cast-iron itself.

A "Eutectic" District Engineer was consulted, and recommended that the forming dies be rebuilt by overlaying with EutecTrode 130 (AC-DC).

EutecTrode 130 (AC-DC) is specially designed for a hard overlay on cast iron and steel which is subjected to constant wear. Its "Frigid Arc" coating helps produce deposits with a hardness of Rockwell C45-47 as deposited: at lowest temperatures. Slight peening and multiple layers increases this hardness to RC 62! Deposits are smooth, dense and offer exceptionally high resistance to wear and corrosion. The low welding temperatures possible with all "Eutectic" alloys avoids the difficulties of embrittlement and warping, common when conventional high heat welding materials are used on cast iron.



(Fig. 1)



(Fig. 2)

Figure (1) shows the building up process with EutecTrode 130 (AC-DC) well on its way. In figure (2) the die is in the final stages of being refinished with this superior alloy. The manufacturer was astonished at the results obtained. After two months of constant use the forming die blocks show virtually no wear. (B-16)

HIGH-HEAT DISCOLORATION ELIMINATED ON STAINLESS STEEL

The high heat needed with conventional silver solder caused discoloration of a new stainless steel mixing valve. This forced the manufacturer into an extra grinding and polishing operation, which considerably increased the unit cost.

On a regular shop call the "Eutectic" District Engineer suggested EutecRod 1801.

EutecRod 1801 is a universal, low-melting silver type alloy with a high tensile strength of 90,000 psi...a perfect combination for stainless steel. It is ideally suited for delicate parts and light gage metals. Tests with EutecRod 1801 showed that the lower heats possible with this "Eutectic" alloy eliminated the troublesome discoloration. Faster joints were possible too, because of the thin flowing properties of this highly developed alloy. The finished joint was strong, leakproof and corrosion resistant.

Now, using EutecRod 1801 to assemble his mixing valves, the manufacturer reports that the elimination of extra polishing and cleaning, as well as increased production, effected savings of \$15,000 a year. (B-17)

NAVY SeaBees LEARN NEWEST ANTARCTIC WELDING TECHNIQUES

A U.S. Navy Construction Training Unit was recently instructed in the latest "Low Heat Input" metal joining methods and alloys by a demonstration team from Eutectic Welding Alloys Corporation. The training unit was part of a Steel Working School at the Rhode Island SeaBee Construction Base. The "Eutectic" demonstration emphasized techniques and alloys specially suited for below zero service conditions. SeaBee construction crews will soon leave for the Antarctic in preparation for the U.S. Navy's participation in the 1958 International Geophysical Year. Special attention was directed at EutecRod 21 and EutecTrode 2101 (DC Reverse).



EutecRod 21 is a torch aluminum alloy for high strength fillet and bead joints on

wrought forms, extrusions and cast aluminum...ideal for architectural and general building use. EutecTrode 2101 (DC Reverse) is a new, patented electrode with extruded "frigid arc" flux coating. Designed for heavier aluminum castings, long joints, filling defects and overlaying, its extruded coating makes it easy to control. Both of these alloys have been found highly adaptable to sub zero service conditions. (B-18)



Q. Please give us procedure for rebuilding and hard surfacing manganese pressure jaws on gravel crushers. Conventional materials always cause distortion and buckling.

A. Manganese jaws of this type can be surfaced with EutecTrode 2 as is, or followed by subsequent layers of EutecTrode 12. For maximum impact resistance, we suggest padding of either EutecTrode 4 or EutecTrode 680 applied directly to the manganese jaws, over which apply EutecTrode 12.

Q. We would like information on overlaying nickel-manganese parts of our shot-blast unit.

A. Assuming the overlay is subjected to heavy impact in service, we would recommend EutecTrode 4. Apply directly to the nickel-manganese parent or, for extremely heavy sections, after a preheat of 500°F. Under certain conditions it is desirable to apply EutecTrode 680 directly to the nickel-manganese base metal without pre-heating and build up with subsequent layers of EutecTrode 4.



Eutectic Warehouse—Service Centers
1108 Blake Street, Berkeley 2, Calif.
5348 Jillson Street, Los Angeles 22, Calif.
1414 South Street, Phoenix, Arizona

Eutectic Welding Alloys Corporation 40-40 172nd Street, Flushing 58, N.Y.

Gentlemen:

I would like further free information on the following:

B-16 B-17 B-18

Free: New 1958 180 page pocket Welding Data Book.

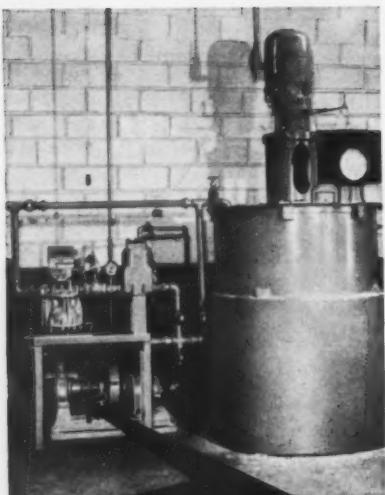
Name _____

Business Address _____

City _____ State _____

EUTECTIC WAREHOUSE—SERVICE CENTERS • 1108 BLAKE STREET, BERKELEY 2, CALIF.
5348 JILLSON ST., LOS ANGELES 22, CALIF. • 1414 SOUTH ST., PHOENIX, ARIZONA

"EUTECTIC" WELDING HEADLINES • TIME • MONEY • MACHINERY SAVERS



VIKING PUMP HELPS DOUBLE DEMAND

(for Permafuse Adhesive)

Permafuse Corporation, Westbury, New York, manufactures adhesives for bonding brake linings to brake shoes. With only one Viking J-152 Pump, Permafuse has produced such high quality adhesive that demand has doubled. So they're adding a new heavy-duty Viking K-212 Pump that, with other equipment, will more than double production.

The Viking J-152 Pump does a variety of important jobs for Permafuse. 1. It pumps resins, synthetic rubber plasticizers, solvents and catalysts from drums and tanks to processing kettle. 2. It then circulates and blends materials for 24-hour periods. 3. After processing the Viking Pump delivers adhesive through meter and filling machine into cans and drums.

Vikings can do multiple job pumping for you, too. For information, see your nearby Viking distributor, or write for bulletin 575a.

VIKING—the leader,
not a follower,
in Rotary Pumps



VIKING
Pump Company

Cedar Falls, Iowa
In Canada, it's "ROTO-KING" pumps

See Our Catalog in Sweet's Plant Engineers File

Pacific Coast Distributors:
E. E. Burton, 4432 Long Beach Avenue, Los Angeles 33, California
DeLaval Pacific Company, 201 E. Millbrae Avenue, Millbrae, California

... for more details, circle No. 62

How multiple spindle tools cut costs, up production

Multiple spindle tools—their purpose and application—are the subject of this 24-page book entitled "Automation in Assembly." Fully illustrated with diagrams, charts and pictures, the book discusses assembly problems of varied industries, cites basic questions and answers about multiples, details planning of bolt-spacing patterns and arrangements. It describes regulator mountings, air supply, suspension, maintenance, and related installation aspects of portable and machine-type multiple spindle tools. *Thor Power Tool Co.*

... for your copy, circle No. 186

6-in. to 6-ft. reversible ratchet wrench line

Reversible ratchet wrenches, with handles that range in size from 6 in. to 6 ft., are detailed in this 12-page manual. It gives complete engineering data and ordering information, with illustrations of standard and special wrenches for nearly all industrial needs. A list of strap wrenches, with handles up to 24 in., is included, as well as a selection chart for choosing the correct wrench for any bolt or nut size. *Lowell Wrench Co.*

... for your copy, circle No. 188

Answers to your questions on lift truck service

Three questions most often asked by lift truck owners and operators are answered in this catalog which describes four lift trucks in the 15,000- to 20,000-lb. load capacity range. Answers to these questions—"What will the truck do?" "Will it stand up in tough service?"; "Is it easy to service?"—are given to help owners select proper equipment for their handling jobs. *Hyster Co.*

... for your copy, circle No. 187

GE bulletin describes numerical positioning

A complete industrial system for automatic point to point positioning of machines and machine tools is described in an eight-page GE bulletin about numerical positioning control. The manual lists benefits, explains theory and operation of numerical positioning, discusses and illustrates typical applications. *General Electric Co.*

... for your copy, circle No. 189

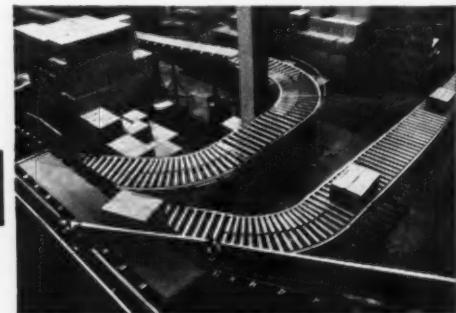
Ask Standard how

belt and roller conveyors ease warehouse traffic jams

FAST flow of goods and simplified labor add up to more profitable warehouse operations.

Standard offers a wide variety of gravity and powered, permanent and portable conveyors that can help you establish smooth, more profitable warehousing.

Spend a few moments with a Standard engineer. He'll show you how inexpensive Standard conveyors give you maximum flexibility at minimum cost. He'll show you, too, how Standard conveyors provide the many advantages of a custom-designed system at low cost. STANDARD CONVEYOR COMPANY, General Offices: North St. Paul 9, Minn. Sales and Service in Principal Cities



Order-picking is expedited and simplified by this Standard system of roller and belt conveyors in large warehouse.

Write for Bulletin 309—
address Dept. H-11. Better
still, contact the Standard
engineer listed in your
classified phone book.



Standard
GRAVITY & POWER
CONVEYORS

SEATTLE: Russel G. Daley, 502 First Ave. S.

SAN FRANCISCO: 840 Harrison St.

LOS ANGELES: 115 E. 23rd St.

... for more details, circle No. 63 on Reader Service Postcard

Seven sizes of flexible shafting units

A complete line of standard flexible shafting units for power transmission in seven sizes is described in Bulletin 250, that covers units which can be provided with either bronze bearings or ball bearings. Also included are selection charts and engineering data sheets on flexible shafting. *B. W. Elliott Mfg. Co.*

... for your copy, circle No. 190

Finger tip facts on fork trucks

Operating characteristics and specifications of the Clarklift outdoor trucks of 35,000- and 40,000-lb. capacities are contained in this six-page catalog, complete with details on dimensions, travel and lift speeds. Charts indicate capacities at varying load centers and pictures show possible job applications and construction features. *Clark Equipment Co.*

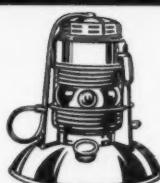
... for your copy, circle No. 191

Selection guide for seamless mechanical tubing

Of interest to engineers concerned with design, fabrication or production of equipment that involves use of hollow cylindrical parts is an eight-page guide book for selection of seamless mechanical tubing. Explaining cost and time saving benefits of tubing over other forms of stock, the book goes on to describe manufacture and finishing, and the differences in dimensional tolerances, costs, machinability and surface finishes of various types of seamless tubing. *Tubular Products Div., The Babcock & Wilcox Co.*

... for your copy, circle No. 192

Dietz



Traffic-Gard Lanterns

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MPANY

... for more details, circle No. 64

WESTERN INDUSTRY — November 1957

Metallic lubrication means MOLUB-ALLOY®

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For all gears, bearings, sliding surfaces

MOLUB-ALLOY lubrication means greatly reduced friction, less wear to vital parts. Lubricating metallic solids, built into all types and weights of oils and greases improve the bearing surface area through plating, preventing metal to metal contact.

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... for more details, circle No. 65 on Reader Service Postcard



... for more details, circle No. 66

86

Steel hubs and malleable split taper bushings

Specifications, prices and other data for ten stock sizes and three made-to-order sizes of steel hubs that will accommodate all sizes of Browning malleable split taper compression bushings are presented in this four-page guide, that shows typical applications such as propeller fan, spur gear and torque control coupling. Data on a line of 16 stock spline bore bushings are included and a complete table of stock bushing bores ranging from $\frac{3}{8}$ to $6\frac{3}{16}$ in. *Browning Manufacturing Co.*

... for your copy, circle No. 193

Photos and facts on welded piping systems

This picture presentation shows 11 basic production steps in the manufacture of welded fittings and flanges for piping systems, plus illustrations of the firm's products. These include 45- and 90-deg. elbows, 180-deg. returns, straight and reducing outlet tees, caps, concentric and eccentric reducers, lap-joint stub ends and welding neck and slip-on flanges. *Clyde Tube Forgings of America, Inc.*

... for your copy, circle No. 194

A look at two models of a low lift pallet truck

Construction details and full specifications are given in this four-page brochure on walkie-type electric-driven industrial trucks WPY 4 and 6, with lifting capacities of 4,000 and 6,000 lb. Featured are a set of spring-loaded pawls that hold the pallet firmly while the forks enter; butterfly controls in the handle regulating the trucks' three speeds, and a simplified lubrication system. *Automatic Transportation Co.*

... for your copy, circle No. 195

PROTO TOOLS

WORLD'S FASTEST TORQUERS
**H
S
C
O** IN STOCK AT **HOWARD
SUPPLY
COMPANY**

... for more details, circle No. 67

Manual covers all phases of battery use

The complete scope of motive-power battery maintenance and repair is described in a 44-page revision of "Battery Users' Manual," developed as a result of in-plant training courses conducted by the firm's service engineers. Designed to help plant engineers, superintendents and foremen to conduct their own organized battery training courses, the reference guide encompasses every phase of battery maintenance, repair and selection. Over 60 pictures, diagrams and tables are used to review battery theory and construction, show proper selection, illustrate charging method and equipment, testing techniques and correct battery room layout. *Gould-National Batteries, Inc.*

... for your copy, circle No. 196

Permold process for high tensile strength castings

Mass production techniques and advantages of the Permold process of producing high tensile strength castings are described in this GE manual. Photographs illustrate this process which allows castings ranging from one-half lb. to 30 lb. to be produced at up to 250 castings per hour, with mold life from 3,000 to 100,000 units. Data is also provided regarding the strength, low costs, uniform structure and internal soundness of such castings. The six-page, fold-out bulletin lists Permold characteristics and properties. *General Electric Co.*

... for your copy, circle No. 197

Information on packings for pumps, valves, mixers

Self-lubricating packings for general service on air, steam and water; for valve stems, small shafts and rods; for solvent or alkali service; for highly corrosive fluids or solvents, and for various other purposes are detailed in an 18-page manual that gives specifications and construction details for many grades. There is also data on molded packings, sheet packings and gaskets, asbestos rope and wick. Also available are a 30-page engineering manual that gives facts on specifications, installation and maintenance of the firm's molded packings for hydraulic and pneumatic uses and three fact sheets on the firm's special tools such as socket wrenches, polishing leather and replaceable face hammers. *Greene, Tweed & Co.*

... for your copy, circle No. 198

152-page manual covers industrial instrumentation

Titled a general catalog of industrial instrumentation; this guidebook's 152 pages cover every phase of the subject, describing equipment for measuring temperature, pressure flow, liquid level and density, humidity and many other factors. A selector guide that pictures all major instruments opens the presentation, which is filled with data about recorders, recorder-controllers, indicators and indicating controls, various control instruments, and accessories for all these. A 16-page section of engineering information includes conversion factors, tables and charts of many kinds. *The Foxboro Co.*

... for your copy, circle No. 199

Thesis on crowned tooth gear type couplings

Development and application of crowned tooth gear type couplings, with particular reference to the steel industry, is the subject of a technical paper reprinted in booklet form. A comprehensive presentation of many factors to be considered in application or design of flexible couplings, the paper is practically a construction manual for gear type couplings. Some of the subjects covered are general functions, external tooth modifications, torque misalignment, review of previous lubricant retainers, balancing, and difficult operating problems. Numerous drawings and application pictures supplement the text. Comments on the paper by engineering executives are included. *American Flexible Coupling Div., Zurn Industries, Inc.*

... for your copy, circle No. 200

Precision



Grinding Wheels
IN STOCK AT

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... for more details, circle No. 68

WESTERN INDUSTRY — November 1957

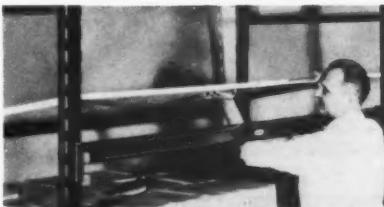
Now! LONG, WIDE-OPEN DECKING UP TO 48" X 96" WITHOUT BRACING!

New STURDI- DECK



- NO NUTS!
- NO BOLTS!
- NO ERECTION
WELDING!
- NO SPACE LOSS
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... for more details, circle No. 69 on Reader Service Postcard

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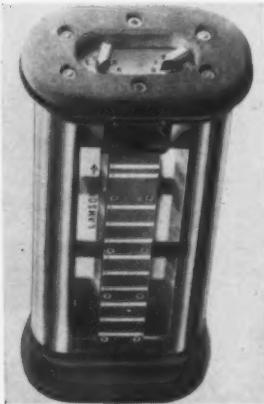
NEW EQUIPMENT

for Western plant operation,
production, and maintenance

USE RIP-OUT POSTCARD, page 83, for more information on products described

AIRTUBE CARRIER

... with eight plexiglass windows



This carrier containing its own simple electric circuit is made of a one-piece polished cast magnesium body with eight plexiglass windows. Big enough to handle large blueprints, inside dimensions are; 2-7/16 x 5-5/8 x 14 in. Dials mounted on the head are for selection. Advantages of a carrier containing its own electrical circuit include simplified installation and maintenance because there is no wiring system or central control

power required. Addition or change of a station requires only tubing work. *Lamson Corp.*

... for more details, circle No. 201 on postcard

LOADERS AND UNLOADERS

... with roller platform

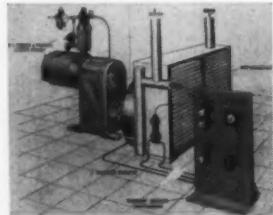


Both units are available for stationary mountings or can be equipped with motor driven wheels on tracks. *Ipsen Industries, Ltd.*

... for more details, circle No. 202 on postcard

TEMPERATURE CONTROL SYSTEM

... holds desired temperature within 1%

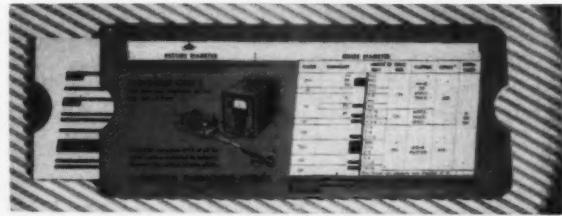


Controlled variable speed for fans or pumps in heat exchange processes is the purpose of the Varitrol control system. Consisting of a Varidrive equipped with a Varitrol automatic control, a temperature sensing transmitter and a control panel, the system can be used at pressures up to 1,000 psi. The temperature transmitter supplies input signals for the control panel, while a gas-filled bulb senses temperatures and corrects fan or pump speeds according to your needs. *U. S. Electrical Motors, Inc.*

... for more details, circle No. 203 on postcard

PROFILOMETER SLIDE CHART

... for getting desired microinch finish



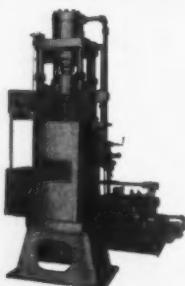
A slide device that gives you a quick, accurate means for determining the right machining operation to use in getting a desired microinch finish, also serves as a compact set of operating instructions. Made of tough fiber board designed for hard use in the shop, it measures 3 1/8 x 7 1/2 in., is printed in red, green and black for easy readability. It also shows typical applications and tolerances. Copies of this chart may be obtained by writing on your company letter head to *Micrometrical Mfg. Co., 345 So. Main St., Ann Arbor, Mich.*

TOP QUALITY EQUIPMENT BY KUX SERVICE TO MATCH BY FERNHOLTZ

KUX TABLET PRESSES

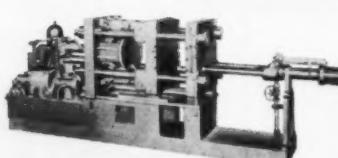
Kux Presses have become the accepted standard machines for automatically forming, at high production speeds, tablets and parts from dry, powdered or granulated materials. They are available in single punch and multiple punch models, mechanically or hydraulically operated in sizes ranging from 50 tons to 600 tons pressing capacity. Rigidity of design and ruggedness of construction enable these machines to meet the most severe demands for service. In addition to their standard line of tablet presses Kux also manufactures special presses for automatic sizing or coining.

CALL FERNHOLTZ
FIRST!



Double Value FOR THE SHOPS WHERE EFFICIENCY COUNTS!

KUX DIE CASTING MACHINES



WRITE FOR BULLETIN #4300 FM

All pertinent data on full line of Kux Die Casting machines and tablet presses.

Kux produces the most complete line of air or hydraulically operated machines for lead, tin, zinc, aluminum, brass or magnesium die casting with a size and model for every die casting need. Simple and safe to operate these machines are low in original and upkeep costs and are used in hundreds of plants in round the clock production.

All hydraulic machines are equipped with extra large oil reservoirs, oversize oil coolers and filters. Models range in size from Model #K-5 having 13" x 6" between tie bars to Model #HP-60 having 40" x 32" of clearance between tie bars and 1000 tons die locking pressure.

8468 W. MELROSE PLACE
Los Angeles 46, Calif.

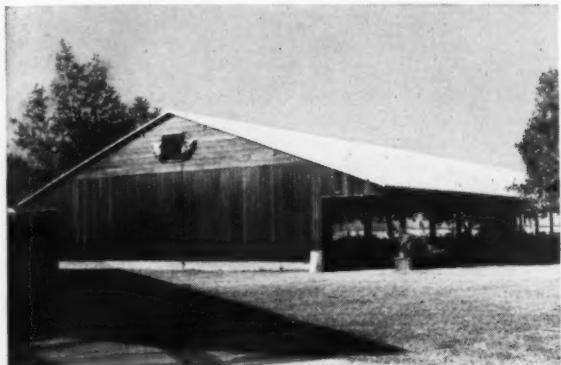
OLive 3-2360

★FERNHOLTZ MACHINERY CO.

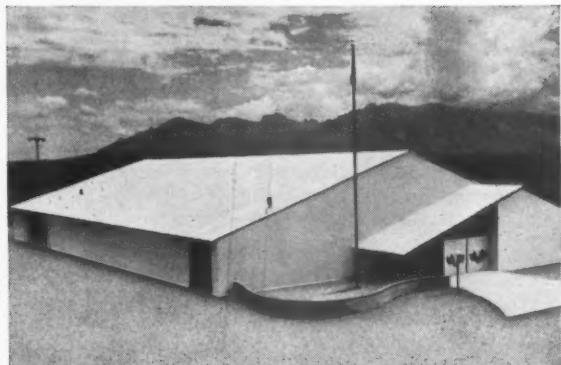
... for more details, circle No. 70 on Reader Service Postcard

WESTERN INDUSTRY — November 1957

check these four good reasons for building with steel



ECONOMY—Real dollar savings are possible when you build with steel. Rigid frame construction with post-free interiors, gives you almost 100% use of the enclosed area. Speed of construction puts the building to use faster...and there's no costly maintenance problem with steel. That's why the District Fair Committee, at Turlock, California, specified steel for the functional, economical fair building shown above.



VERSATILITY—The building above is an example of the flexibility of use possible with steel structures. This is a combination gymnasium, auditorium and classroom in Tucson, Arizona. Steel buildings are being constructed for *every* purpose in all kinds of businesses, industries and institutions. And remember, the use of steel construction allows for the easiest and most economical expansion of your building when needed.



STABILITY—The strength and rigidity of steel makes it the ideal material to use in the construction of industrial plants, warehouses and shipping sheds. It combines structural strength with freedom of layout and movement in your building. Rigid frame construction provides a stable structure which withstands battering winds, weather and accidental knocks. That's why steel was selected for the loading depot, above, under lease by Pacific Motor Trucking Company in Fresno.



BEAUTY—The attractive looking office building above, located in Bakersfield, is just one example of the many smart architectural designs possible with steel. NOTE: The architect-designed buildings shown on this page were constructed from Butler Manufacturing Co. pre-engineered structural systems using United States Steel Roofing, Siding, Plates and Sheets. When you build, specify the *one* material that gives you *all* the important building advantages...steel...United States Steel.

For offices, plants, theatres, farms, churches, schools...

Give your buildings the advantage of steel

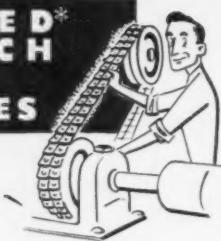
United States Steel Corporation • Columbia-Geneva Steel Division
120 Montgomery Street, San Francisco 6



UNITED STATES STEEL

...for more details, circle No. 71 on Reader Service Postcard

**GUARANTEED*
LESS STRETCH**
on all your
V-BELT DRIVES



**NEW
IMPROVED**
BRAMMER RED

- ★ GREATER STRETCH RESISTANCE!
- ★ MORE PLIES IN EACH SIZE GIVES HIGHER POWER CAPACITY!
- ★ IMPROVED FLEXIBILITY!
- ★ GREATER RESISTANCE TO SHOCK, FATIGUE, AND ABRASION!
- ★ MUCH LONGER LIFE!
- ALL AT NO INCREASE IN COST!



BRAMMER CORPORATION 684 BROADWAY, NEW YORK 12, N.Y.

... for more details, circle No. 72 on Reader Service Postcard



CUTTING FLUIDS

—NO OTHER FLUIDS DO A BETTER HEAT DISSIPATING JOB—

Hydraulic oil serves not only as the fluid medium. It is also the source of lubrication for working parts. Pennzoil cutting fluids are made from top grades of raw material, refined to eliminate unstable elements. High film strength cushions both work and forming tools to prevent metal adhesion and pick up. Anti-rust and corrosion properties contribute to long tool life.

For smooth, precision work-surface finish . . . for top coolant efficiency depend on Pennzoil cutting fluids—designed to pay off in terms of profits for the machine tool industry.

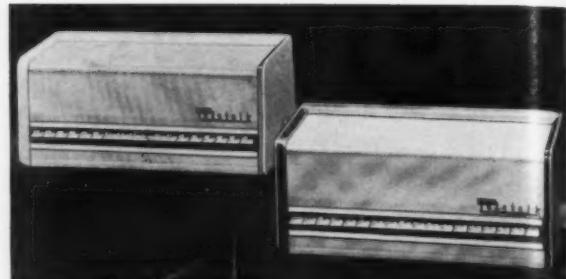
THE PENNZOIL COMPANY

Branches to serve you in principal
Western State Cities

... for more details, circle No. 73 on Reader Service Postcard

INTERCOM SYSTEMS

... with transistors and printed circuits



First high-powered intercommunication systems with transistors and printed circuits, these units now come in the administrative and executive series for use in plants, offices, institutions, etc. The fidelity, clarity of voice transmission, freedom from distortion and circuit noises, operational ease, economy and service are characteristics of the units, according to the manufacturer. All models have printed circuits, with transistors optional. Other design features include combination light and buzzer annunciators, talk-listen control switch, "no snoop" silencers, separate pilot and busy lights, and sound controls. Capacity of the single bank models ranges from 6 to 24 stations. Webster Electric Co.

... for more details, circle No. 205 on postcard

FOUNDRY CUT-OFF WHEEL

... for off-hand floor stand, swing-frame uses



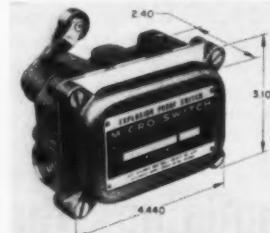
Introduced recently after a year's testing in foundries is this reinforced cut-off wheel, said to have a wheel life 33% longer than the company's previous product. Made with an improved resin bond for long wearing qualities, it also has excellent chemical and heat-resistant properties. Recommended particularly for foundry cut-off work, it is available with diameters

from 12 to 20 in., in standard hole sizes. Thicknesses range from $\frac{1}{8}$ to $\frac{1}{4}$ in. Bay State Abrasive Products Co.

... for more details, circle No. 206 on postcard

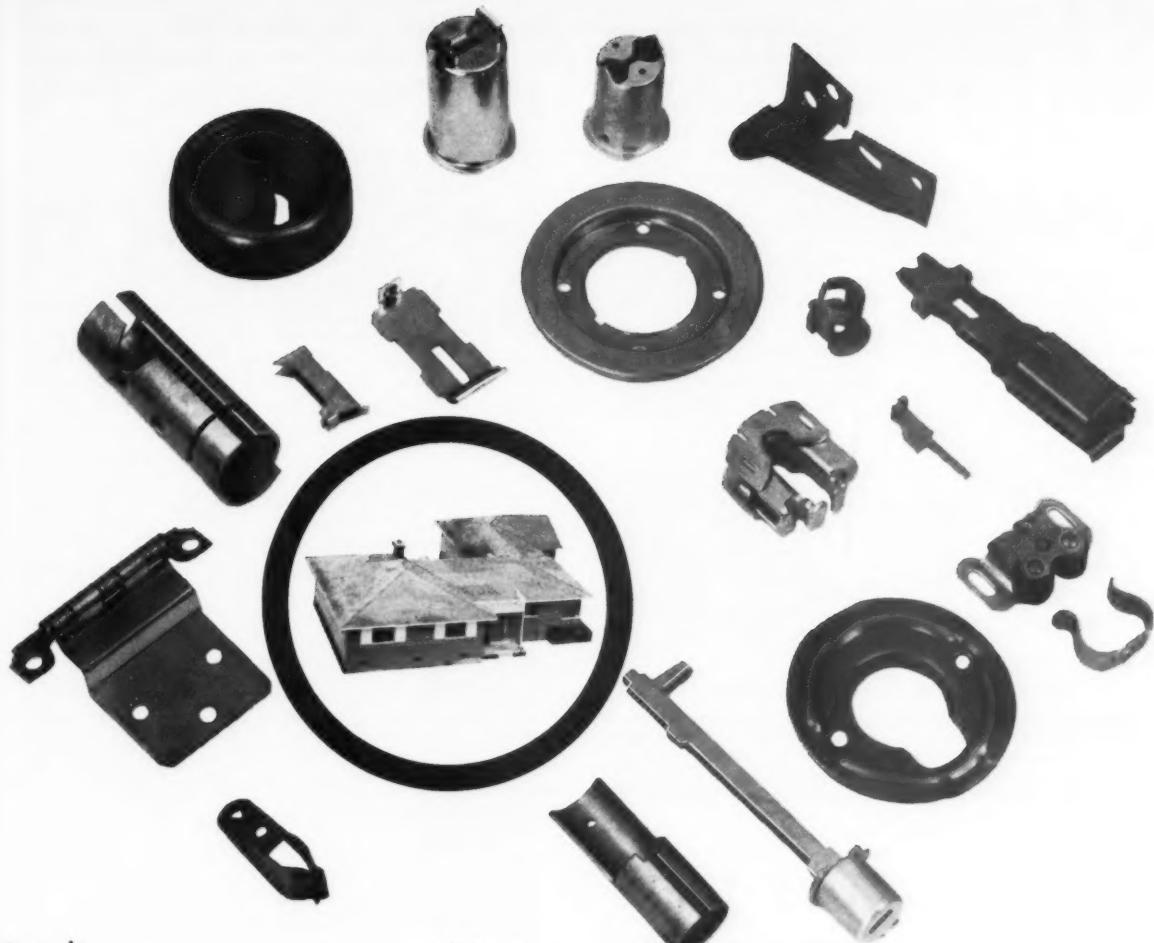
EXPLOSION-PROOF SWITCH

... with double conduit openings



Designed to reduce many installation costs, this explosion proof switch features double conduit openings and through wiring, and carries Underwriters' Laboratories listing for hazardous atmospheres of ethyl ether vapor, gasoline naphtha, alcohol, acetone and natural gas vapors, as well as carbon black, coal, coke dust and grain dust. In aluminum alloy housings, switches have two 10-32 NF tapped mounting holes on top, side and bottom of the housing to permit direct mounting and wiring. Minneapolis-Honeywell Regulator Co.

... for more details, circle No. 207 on postcard



When spec's call for close tolerances...

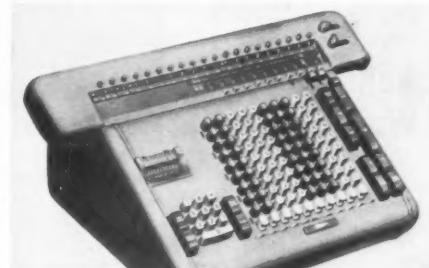
LEADING MANUFACTURERS IN THE WEST SPECIFY CALSTRIP STEEL STRIP

High volume production of parts for locksets, hinges and cabinet catches requires steel strip of superior quality that consistently meets these specifications:

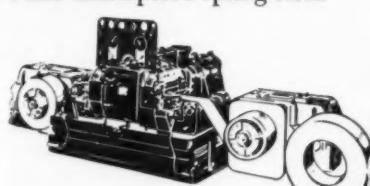
1. Minimum thickness variations
2. Narrow ranges of temper or hardness
3. Limited allowances for width variation and camber
4. Smooth, lustrous finish, free of defects

Excessive costs due to rejected parts and idle equipment are eliminated when components are made from *Calstrip Close Tolerance Strip*. End products are assembled at lower cost, and function better.

Start cutting *your* costs now—by specifying Calstrip quality low carbon and untempered spring steel.



Calstrip close tolerance strip assures proper assembly of thousands of moving parts in business machines.



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RAYmond 3-1344

... for more details, circle No. 74 on Reader Service Postcard

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TIME • MANPOWER
MACHINERY • MONEY

CLEAN
FASTER,
EASIER,
BETTER



... with a CLEMENTS-CADILLAC

Save your equipment. Remove dirt, dust, grit, filings from every crack and crevice before they damage your machinery, decrease its efficiency. You'll reduce repairs, replacement, down-time.



Ask your mill supply dealer for a demonstration, or write us for information.

"Most Useful Tool in the Plant"

CLEMENTS-CADILLAC COMBINATION BLOWER-SUCTION CLEANERS

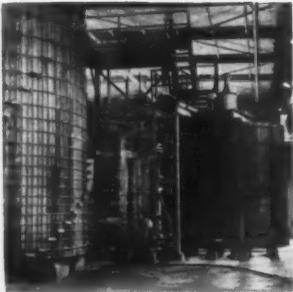
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USED BY BUSINESS AND INDUSTRY FOR MORE THAN 44 YEARS

... for more details, circle No. 75 on Reader Service Postcard

Windeler Wood Tanks

**SOLVE
ACID
Problems
And Work
With Caustics**



Windeler tanks handle acid solutions economically. Pictured here are three Windeler Built Tanks in a South Dakota uranium mill handling various solutions. At the left is an ion exchange feed (highly acid, pH 1.7) holding tank, large tank at right is a slime tailing neutralization tank and the small one in the center is a lime slurry tank.

Wood tanks also handle acetic acid of 40-80%, sulfuric of 5%, or hydrochloric of 5%. When planning new construction or expansion, plan on wood tanks for economy.

**G eorge
W indeler
C ompany**

LIMITED

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Ask for folder W-3 or
specify your problem.

"Our 72nd Year."

2225 Jerrold Avenue, VALENCE 4-1841
SAN FRANCISCO 24, CALIFORNIA



OVERHEAD TRAVELING CRANE

... opens, closes doors automatically



Designed for use throughout full runway length without interference from the door or the building construction, this crane opens and closes doors automatically. As the crane passes in or out of the building, it attaches itself automatically to runway door, pushes it to runway end and then disengages, leaving door anchored in place at end of runway as long as desired. In closing the runway opening, the operator eases crane against door, automatically attaching crane to it, and pulls it back to opening in building where door disengages itself from the crane and assumes its proper position. *All-State Engineering Co., Inc.*

... for more details, circle No. 208 on postcard

MOLDED RUBBER DOCK BUMPERS

... for superior shock-absorbing, cushioning



... for more details, circle No. 209 on postcard

SELF-PRIMING SUMP PUMPS

... can start under full loads even submerged



Additions to this firm's line of pneumatic equipment are two new self-priming air-powered sump pumps with capacities ranging from 222 gal. per min. at a 30-ft. head to 20 gal. per min. at a 200-ft. head. Both high-capacity models weigh about 50 lb. over-all, are 22½ in. high and operate on pressures of 85 psi. Used for pumping clear or dirty water, oil, sewage and moderately heavy sludge, they are able to start under full loads and operation even when wholly submerged. Designated the LPC-21 and LPC-41 each pump consists of a one-piece

housing that contains vane-type motors and impeller-type centrifugal pumps. Specifications include ¾-in. air inlets, 1-in. exhausts and water discharges of 2½ in. for the 21, and 1½ in. for the 41. Two 21 pumps can be hooked up in series to provide a high head unit with greatly increased capacity. *Atlas Copco Pacific Inc.*

... for more details, circle No. 210 on postcard

HEAVY DUTY SABRE SAW ... cuts flush to wall



The Sabre Saw H75 may be the answer if you are looking for a fast-cutting, portable heavy duty saw. Complete with anti-vibration mechanism and chip blower to keep guide lines clear, it can cut through a full 2 in. of lumber, also cuts metal, plastic, veneers, composition board, rubber and leather. By moving the base back and using the shear cutting blade, you can cut right up to a wall. Kit includes the saw, eight different blades, a ripping guide and a metal carrying case. *The Stanley Works.*

... for more details, circle No. 211 on postcard

PORTABLE ARC WELDER

... gas driven with dual controls

Got a welding job to do, but no electric power available? This model K-6090 welder with its 36 hp. water-cooled engine can do it for you. It is NEMA rated 200 amp. at 40 volts and 60% duty cycle; has dual controls for the generator output, and an electrical outlet providing 1 kw. of auxiliary d-c. power. In addition there is an idling device which reduces engine speed to 1,000 rpm. when the welder is not in use. Controls on the welder incorporate a five-step selective current control with an overlap allowing either high or low open circuit voltage for any current. Auxiliary power is 115 volts, d-c., which can be used for power tools or lighting. A 16-gal. gas tank feeds the unit for 14 hr. at 60% duty cycle, without refills. *The Lincoln Electric Co.*

... for more details, circle No. 212 on postcard

LIFETIME LUBRICANT

... resists oxidation and gumming

For lifetime lubrication of instruments, meters and precision machinery, this Custom Lube 101L has a life free from gum or oxidation for 15 years and will prevent wear under extreme loads. Applied by a simple dip or spray, it requires no baking or other special treatment. It offers excellent performance from the residual film by spray or brushing, has prevented any detectable wear in both steel and brass parts operating under so severe loading that seizure and welding had been a chronic problem with other lubricants. If you want a sample tube, circle number below. *Vaughn Chemical Co.*

... for more details, circle No. 213 on postcard

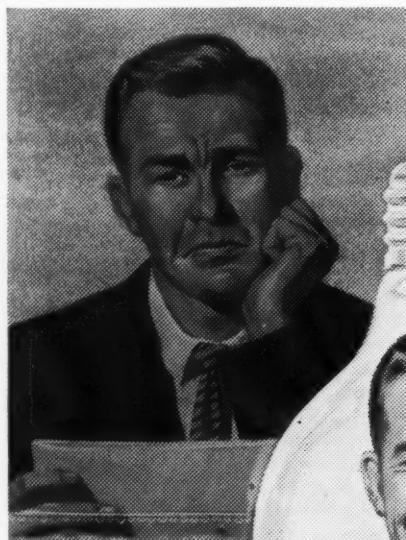
HYDRAULIC BRAKE

... for small cranes and machines



Smooth, powerful service braking is the purpose of this 6 x 3 in. hydraulic brake, also suited to tension control on mill roll stands and emergency stopping, holding and service braking on a variety of different machines. Designed for use with hydraulic brake fluid, the brake can also be furnished with mineral oil compatible parts for fluid power-holding operations. Smallest in the Wagner line of industrial brakes, it is ruggedly constructed and operates through a manual control cylinder equipped with a foot pedal. An anti-drag device prevents the brake shoe from dragging on the brake wheel when shoes are in release position. *Wagner Electric Corp.*

... for more details, circle No. 214 on postcard



In the dark about who sells
the **BRAND** you want?
Enlighten yourself in the...
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Just open the Yellow Pages to the product heading you want. Like tools, for instance. There you'll find Brand Names listed alphabetically—each with the local dealers who sell them. That's all there is to it... takes just seconds.

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Special sizes to order.
Milled or Centerless Ground (Precision Type).
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JM-6

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ELECTROLIFT solves our hoisting problems

Wide selection of dependable worm drive hoists with capacities from $\frac{1}{4}$ to 10 tons . . . compact . . . close headroom . . . precise control. Consult your local ElectroLift representative or write for complete catalog.

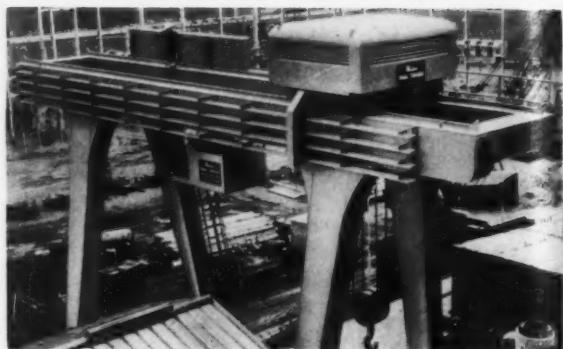
WORM DRIVE
ELECTROLIFT

4657

204 SARGEANT AVE., CLIFTON, N. J.

... for more details, circle No. 79 on Reader Service Postcard
94

DUAL TORQUE CRANE ... eliminates auxiliary hoist



Dual capacity and speed with one set of hoisting and electrical equipment, constant torque and speed irrespective of load on any operating point, smooth hoisting and lowering in increments of .005 to .10 in. are operating advantages of this Paceco crane with the Dual Torque hoist. Applicable to both gantry and bridge cranes, the hoist control eliminates an auxiliary hoist and represents a new hoisting concept that lowers first costs, reduces maintenance, saves operating time and increases operating efficiency. Dual torque design combines constant speed load characteristics of the shunt motor with a four to one speed range. *Pacific Coast Engineering Co.*

... for more details, circle No. 215 on postcard

Hydraulics
ALL PRESSURE RANGES



CIRCUIT LAYOUT

SYSTEM DESIGN

FABRICATION

COMPLETE STOCK

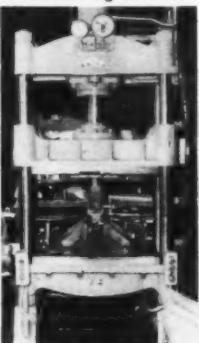
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"A working team for Industry"

"A working team for Industry"

As manufacturers of excavating teeth and other accessories for trenching and earth-moving equipment, the H&L TOOTH COMPANY uses this Rodgers platen press through two eight-hour shifts every day.

Its fast approach and return enables simple, economical, hot-shearing and punching.



Rodgers presses have a place in your operation; ask us about it!

phone or write for complete information...

HYDRAULIC
DIVISION

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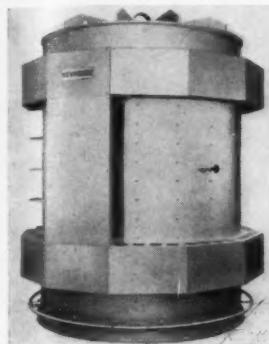
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5350 EAST WASHINGTON BLVD.
LOS ANGELES 22, CALIFORNIA

... for more details, circle No. 105 on Reader Service Postcard

VACUUM FURNACES

... for titanium, zirconium, other materials



Standard vacuum furnaces available for either single or double pump vacuums, these come in double pump, pit or ball type to operate at temperatures to 2,100 deg. F., and in single pump for bell, pit, box and tube types for uses up to 1,600 deg. F. Clean, safe, easily regulated uniform heat throughout the furnace chamber assured by careful design of electric heating elements and zoned heat control. Preformed and laminated insulation layers minimize heat losses and water-cooled flanges perfect a vacuum seal between retort and furnace shell. This type of furnace has been widely used for refinement, heat treatment and joining of titanium, zirconium, stainless steel and other materials. *Hevi-Duty Electric Co.*

... for more details, circle No. 218 on postcard

BIG DUST COLLECTOR

... cuts emptying time in half

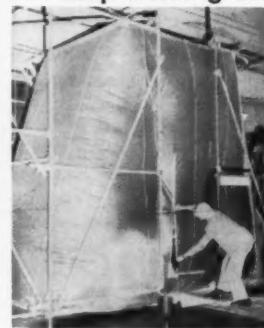


Ten inches higher than the firm's standard model dust collector, this Model 520-D has identical air handling characteristics and base dimensions, but a dust storage bin that is over twice as large. Recommended for use in metalworking shops or in other shop operations where dust volume is unusually large, it is useful, too, for ordinary dust problems, since its increased capacity cuts the need for emptying in half. Base of the collector is 18 x 32 in., height, 34 in. *Aget Manufacturing Co.*

... for more details, circle No. 219 on postcard

TRANSLUCENT PROTECTIVE FABRIC

... keep working areas free of dust, fumes



For industrial areas that must be kept free of dust and contaminating fumes, yet require penetration of natural light, this Herculite F36 Clear provides a non-porous, tear-resistant, protective covering. Made of a double lamination of tough vinyl plastic over a mesh of Fortisan 36, it is acid and fire resistant, rot-, water- and mildew-proof. Because of its light weight, an enclosed area of this fabric is easily set up or taken down and uses minimal storage space when not in use. It is shown here as used to make a temporary "grade A" clean room during construction of a Navy nuclear powered submarine. *Herculite Protective Fabrics.*

... for more details, circle No. 220 on postcard

Never Out of Line!



GOULDS "CLOSE CUPLD"

CENTRIFUGAL PUMPS

- COMPACT Unit Design
- EASY TO INSTALL AND MOVE
- MULTIPLE USES
- LOWER COST

Single Shaft for Pump and Motor keeps perfect alignment . . . eliminates vibration. Unit construction does away with Bed Plate. Compact—self-contained—needs no special foundation. Operates in all positions except vertical with Motor below Pump.

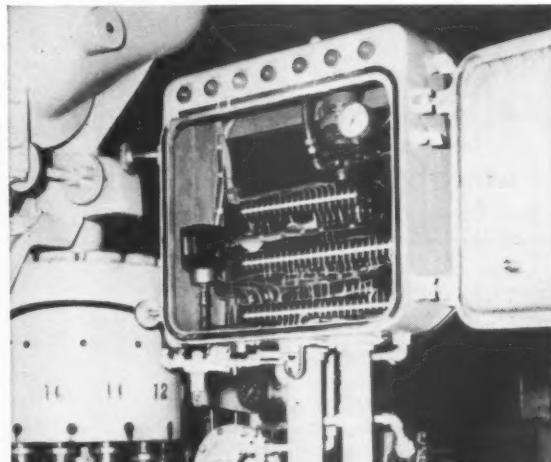
Three types—20 Sizes
Capacities up to 2000 g.p.m.
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Consultants on any Pumping Problem

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NEW WIRE FOR "HOT SPOTS"

Anaconda's new Densheathe* 900 all-purpose wire—made with a new, high heat-resistant PVC insulation—gives plants an extra margin of protection wherever wiring is exposed to chemicals, oil or moisture at high ambient temperatures; and affords greater current-carrying capacity! Densheathe 900 is approved as Type TW and can be used in National Electrical Code applications. In other applications, it can be used to its maximum rating of 90°C copper temperature. Available in sizes 14 Awg to 2000 Mem. Write for descriptive Bulletin DM-5612. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

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CUSTOM FABRICATION OF...

STEEL PLATE

to meet specialized
plant and
equipment
requirements

You'll save time,
trouble and money by
contacting Puget Sound—
a versatile, "on the spot"
custom source with over 56
years of experience in the
fabrication of steel plate
and alloys up to 1". Send
prints for prompt quotation
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FABRICATORS, INC.**

Craftsmen in Metals

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Craftsmen in steel plate and alloys up to 1"

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READ
any surface temperature
with *Alnor* PYROCON

Equipment...material...metallic
or non-metallic...flat, curved...
revolving or stationary—you can
read every surface temperature
accurately in less than 3 seconds!

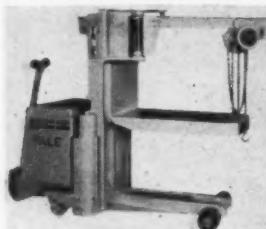
Compact in size, complete in precision
design and workmanship, this rugged
instrument assures the highest standards
of speed, accuracy and dependability.
Heavy-duty, shock-resisting movement is housed
in a balanced unit that is easy to handle...
reaches any point.

Alnor Portable Pyrocons come in scale
ranges to 2000° F., with thermocouples for
every application. You'll find full details on the
Pyrocon exactly suited to your operations in
Bulletin 4257. Send for your copy now.
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Matheson-Doherty Company, 225 Shaw Rd., So.,
San Francisco, Calif.; Fairman B. Lee Company,
219 Central Bldg., Seattle 4, Washington.

... for more details, circle No. 83 on Reader Service Postcard

LIFT TRUCK ATTACHMENT

... makes handling of bulk fragiles easy



The rider-walkie lift truck you are now using can be converted for handling fragile bulk by adding a swinging boom to which a one-half ton capacity spur gear trolley type hoist is attached. This four and one-half in. I-beam slews through 18 deg., but because of the 90 deg. angle side-loading, capacity of the boom is limited to 750 lb. Hand operated track clamps lock the hoist trolley to the I-beam while you have the truck in motion, and the 40-in. outreach boom permits 21 in. of hoist hook travel along the boom. While the Worksaver is being used as a standard platform carrier, the boom can be locked in a straight forward position. *Yale & Towne Mfg. Co.*

... for more details, circle No. 221 on postcard

ADJUSTABLE ANGULAR TORCH HEAD

... needs no tools to set cutting angle



The cutting angle can be set without tools and without removing the accessory from this torch which has a range of 250 deg. Required angles can be set between 0 and 90 deg. either side of vertical, and within an additional 35% above horizontal. Both sides of the body bear indexing marks in increments of 5%. The angular head accommodates standard Airco acetylene, propane, and natural-gas tips and is designed for service with the Airco style 4700 machine cutting torch. Manufacturer suggests applications such as bevel cutting, H and I beam work, flanging and structural shape cutting. *Air Reduction Pacific Co.*

... for more details, circle No. 222 on postcard

PNEUMATIC SPRAY SYSTEMS

... for grinding, milling, sawing, tapping

Operated by gravity, syphon, air or pump, these pneumatic spray systems atomize oil in a nozzle of a spray valve by compressed air for applications such as grinding, tapping, reaming, punches and dies, sheet stock oiling, hot chains, cams, die casting molds, etc. Gravity or syphon operated units provide low cost with simple operation; air operated types give maximum flexibility and full control, while pump-operated systems, although highest priced, have flexibility, full control and constant oil delivery with possibility of an oil return line. Pneumatic spray valves using these systems are of the general purpose external mixing type that reduces objectionable oil fog to a minimum, produces a round spray pattern. Each valve has two needle valves, one each to control flow of air and oil. Spray valves come in two styles, with nozzle mounted directly on the valve or with it mounted at a remote point. *Oil-Rite Corp.*

... for more details, circle No. 223 on postcard

EMERGENCY LIGHTING UNIT

... illuminates instantly if power fails



Maximum protection in case of power failure is provided by this emergency lighting unit that will give sufficient illumination to carry on operations for many hours. Designed for plants, laboratories and other places where that extra margin of safety is a must, it's powered by a storage battery built into the portable set, has a trickle charger that automatically maintains the charge of the battery, and hydrometer to indicate state of the battery at a glance. It requires no installation, can be plugged into any a-c. circuit. Lights are sealed beam of 100 cp., and will give continuous light for 10 hours. Price of Model E unit is \$86.90 complete. *General Scientific Equipment Co.* . . . for more details, circle No. 224 on postcard

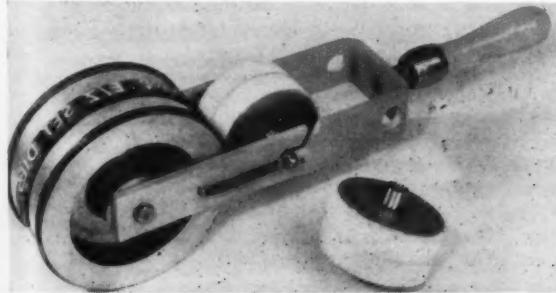
HIGH SPEED AIR MOTOR

... operates at over 1,000 deg. F.

Believed to be the answer to the long sought power source that can withstand high temperatures found in supersonic flight, this cam-piston motor is a positive displacement, fluid driver power device that uses hot compressed air. Gearless, the motor, which looks like a healthy rolling pin, is produced in three sizes varying in length from 9 to 13 in. Weighing 22 lb., it has an 18.5 hp. output at a low rpm. and provides high starting torque. Other features are fast acceleration with quick reversibility, maximum hp.-to-weight ratio and flexibility of overall design. This motor is said to provide the equivalent number of strokes per revolution with a uniform output torque as a conventional four cycle engine with 36 cylinders. *The Garrett Corp.* . . . for more details, circle No. 225 on postcard

SINGLE WHEEL CODE PRINTER

... with E-Z set type



Designed for hand operation or mounting on a continuous conveyor line, this single wheel code printer gives clear marking on any absorbant surface. Fast type changing is achieved by pressing type on the 4-, 6-, or 8-in. wheels and interchangeability of ink fountains makes "color coding" practical. *The Pannier Corp.*

... for more details, circle No. 226 on postcard

Here's a Fine Shortcut

Cleaning and rustproofing

— in one washing operation

Oakite Composition No. 98 (used cold or hot in washing machines) removes oil and chips but leaves a thin film that prevents rust between operations or during temporary storage . . . Excellent for cleaning before inspection.

FREE For your copy of the "Oakite Composition No. 98" bulletin on power washing, write Oakite Products, Inc., 1001 E. First St., Los Angeles 12, or 681 Market St., San Francisco 5, Calif.



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CRANE WHEELS AND WHEEL ASSEMBLIES



INSTALL THESE WHEEL ASSEMBLIES complete with axles, bearings, drive gears, grease fittings and all necessary parts for a complete installation. There are sizes, types, and styles of mounting to suit every requirement.

DOUBLE FLANGED WHEELS range in standard tread diameters from 7 1/2" to 24"; SINGLE FLANGED WHEELS from 4" to 8". Wheels are available unmounted or in completely assembled units.

WRITE FOR CATALOG Complete line of Downs Crane Wheels and Assemblies are illustrated and described in new Catalog No. 354-2. Specifications included. Write today!

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MECHANICAL ENGINEERS

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Electric Cranes • Hand Cranes • Jib Cranes • Sheaves • Sheave Blocks
Plate Grips • Plate Hooks • Crane Trolley Hoists • Crane Wheels • Crane
End Truck Units • Jib Crane Fittings • Automatic Mechanical Load Brake
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SURESEAL
INDUSTRIAL GLOVES
the only gloves
made with HYCAR

For most of those "tough-on-gloves" jobs Surety Sureseals give you the greatest hand protection and longest service life. Sureseals have the highest resistance to practically all industrial chemicals, acids, oils, solvents, etc. . . . plus 4 times greater snag resistance and 10 times greater abrasion resistance. Write today on your letterhead and we'll arrange a test at our expense—just tell us the material gloves are subjected to. Sureseals are available in numerous styles including Turn-cuffs and various weights and lengths.

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SURETY
RUBBER CO.
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Western Sales Representative:
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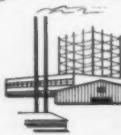


Save money with Empire steel buildings—One contract—all work guaranteed. 100% financing available also low-cost leasing. Buildings of any width, length or height. Quality at a price. Both rigid frame clear span and flat rise tapered girder designs; will support cranes and monorails.

Leak-free and rattle-free Empire sealed die-formed sheets roll and tuck under roof sheet; one-piece sidewall sheet eliminates end laps.

Also all types masonry, pre-cast tilt-up concrete, and aluminum buildings. Free estimate and rendering without obligation. Write or phone for catalog or information.

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EMPIRE

STEEL BUILDINGS CO.

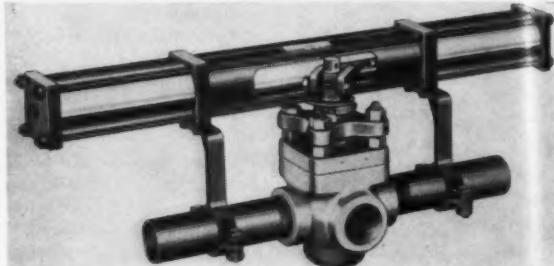
STEEL AND CONCRETE CONSTRUCTION—TURNKEY JOBS

2137 Marianna Ave., Los Angeles 32, Calif.

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PLUG VALVE OPERATORS

... three models, torque range to 94,000

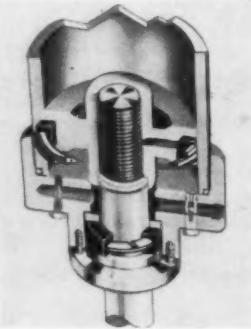


Designed for use with air, gas, oil or water at pressures up to 200 psi, is a line of medium duty plug valve operators adaptable to many control requirements, including process cycling, safety and automatic shut-offs or combinations of these. Model FM for use on valves requiring relatively low torques is a floating bar type operator with two single-acting cylinders; Model TM for higher torques has two double-acting cylinders, and Model QM consists of two Model FM or TM operators mounted on one bracket, offering twice the torque capacity of the given size unit. Mounting brackets available are dual pipe, bonnet and flange type valve. Control valves for automatic or remote operation can be supplied. *Leedeen Mfg. Co.*

... for more details, circle No. 227 on postcard

METALLIC PACKING

... piston type with pressure sealing



The principle of pressure sealing is used in making Rodpak, a metallic, piston or rod type of packing with a Hycar rubber housing ring that seats soft metal against cylinder walls or piston rods to form a close seal that reduces friction, increases operating efficiency. According to the manufacturer, the soft metal rings form themselves into any irregularities of walls

or pistons, eliminating adjustment of packing glands or take-up. Installation is simple and often accomplished without aid of take-up gland or squeezing action. Packing is said to have the lowest possible coefficient of friction and its use practically eliminates scoring of rods or of cylinder walls. *Remco Mfg. Co.*

... for more details, circle No. 228 on postcard

✓ check

the many advantages of

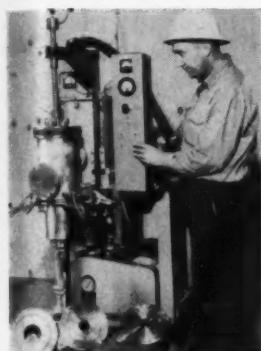
SORBONCAST
CAST IRON
DAYTON FOUNDRY

Hollydale, Calif. • Nevada 6-1251

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VACUUM MELTING FURNACE

... 0.2 micron, research laboratory type



Now on the market is a furnace for vacuum melting of titanium, zirconium, vanadium, columbium and other metals that require controlled atmosphere melting that has a Kinney Model KC-15 vacuum pump capable of a 0.2 micron vacuum. It is designed to produce by the consumable electrode melting process the standard 1 1/2 in. diameter, 1/2 in. deep evaluation button by arc melting of sponge or shavings, or to produce sample ingots of from 2 to 6 in. diameter ranging in length up to 16 in. Molds are contained in a water-cooled copper crucible. The furnace rectifier operates on a 1,000 amp. continuous duty cycle requiring 440 v., 3-phase 60-cycle power. Furnace can be pressure back filled with helium or argon or a mixture of both. *Oregon Metallurgical Corp.*

... for more details, circle No. 229 on postcard

WATER ALARM SAFETY UNIT

... warns truck drivers if water is low



With this unit installed on the motor of your truck, tractor, road equipment or stationary motor, you'll be warned that water is low before the engine registers any heat or if water is suddenly lost from a broken hose. Installed on pump circuit with upper hose terminating at the base of the top radiator tank, the Water-Larm will suck air and switch on a red warning-light on the dash when the water drops near bottom of the tank (or any previously selected level). Made of all brass, aluminum and stainless steel, it can be installed in about two hours, carries an unlimited guarantee with lifetime replacement. *Water-Larm Corp.*

... for more details, circle No. 230 on postcard

WORK BENCHES

... with seamless wood tops, tension bolting

The Sturdi-Bilt line of steel work benches, which includes types for various uses, features a seamless plastic-impregnated solid wood core top construction, a finish that will not crack, reduces noise and clatter, resists oil and greases, and is a non-electrical conductor. The vibration-proof tension bolting of the bench frames gives rigidity of a welded bench, and completely eliminates wiggle and sway because of its interlocking feature and constant tension. Products in the line include those for heavy duty, pedestal and continuous, general service, wall-mounted folding bench unit and utility table, plus shop accessories such as steel risers and backs, adjustable and multiple drawer shop tenders. Facts about these products, and the firm's engineering services are detailed in a new catalog, 357. *Sturdi-Bilt Steel Products, Inc.*

... for more details, circle No. 231 on postcard

WHICH V-BELT is best for you?



If the correct size of endless V-Belt is not readily available, or if you have to tear down machinery to install, then the best belt to use is open-end V-Belting fastened with

ALLIGATOR V-BELT FASTENERS

★ In this way you can make up V-Belts in any length to fit any drive the fast economical way—V-Belts that perform exceptionally well.

★ In contrast to link-type belts these ALLIGATOR fastened V-Belts have just one strong joint... stretch and follow-up maintenance are reduced to a minimum.

ALLIGATOR INTRODUCTORY V-BELT DRIVE UNITS

contain V-Belting, Fasteners and Tools—everything you need in one compact package to make up V-Belts quickly. Available in sizes A, B, C & D.

Ask for Bulletins V-215 and V-216
Order From Your Distributor

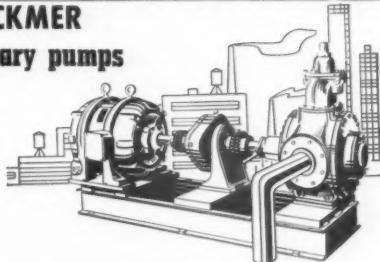
FLEXIBLE STEEL LACING COMPANY
4642 Lexington Street, Chicago 44, Illinois



... for more details, circle No. 89 on Reader Service Postcard

BLACKMER

rotary pumps



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● low maintenance

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REPLACEABLE LINERS — Liner replacement is simple and eliminates the need for replacing the entire pump.

WIDE RANGE of APPLICATIONS — Blackmer Pumps are handling hundreds of liquids and semi-solids successfully. Power units for electric, gasoline, or diesel power, with capacities from 10 to 1500 GPM, for liquid pressures up to 125 psi, temperatures to 450° F.



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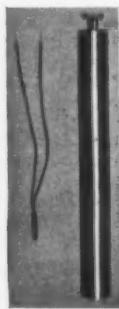


TRENT STRIP HEATERS

for Ovens, Dryers, Kettles, Process Equipment

- Flat Metallic Tube Casing
- Ceramic Block Terminal Blocks
- No Grooves—No Heat Distortion
- Sealed End Construction

Available in a complete range of types and sizes, wattage requirements, and voltage conditions—for maximum safe surface temperatures of 750°F. and 1000°F!



TRENT CARTRIDGE HEATERS

for Dies, Molds, Platens, Sealers, Defrosting

- Brass or Steel Sheath Construction
- Silver Soldered End Opposite Terminals
- Moisture and Wax Resistant
- Nickel Chromium Heater Coil Sealed in Ceramic Insulation
- Brass Angle, Pigtail, Rod, or Stud Type Terminals

Standard sizes from $\frac{1}{8}$ " to $1\frac{1}{2}$ " diameter, and $1\frac{1}{2}$ " to 22" in length, are supplied in a range of wattage requirements for 110 and 220 volt operation.

Discuss your spot heating requirements with a Trent representative.

Trent Representatives in
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Coast to Coast

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Electrically Heated Industrial Equipment
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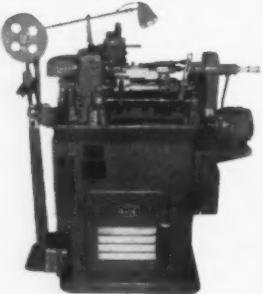
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Exclusive Distributor West of the Mississippi

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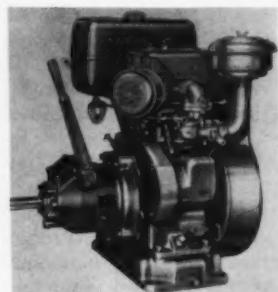
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In San Francisco: Sherritt-Strausmann Machine Company, Inc.
1551 Mission Street, San Francisco 3

... for more details, circle No. 92 on Reader Service Postcard

SINGLE CYLINDER ENGINE

... 12 1/2 hp., speed from 1,600 to 3,200 rpm.



Recent addition to this firm's line of four-cycle single-cylinder engines is this Model AGN, rated at 12 1/2 hp., with a 1,600 to 3,200 rpm., speed range and piston displacement of 38.5 cu. in. One of its outstanding features is its basic high torque to provide load-holding lugging power that resists rpm. slowdown under sudden shock loads, prevents stalling and permits quick power recovery.

Scheduled for fall delivery, it is designed for field utility units, truck and trailer refrigeration units, railway maintenance equipment, etc. The manufacturer has similar engines ranging from 3 to 9 hp., as well as 2-cylinder and V-type 4-cylinder sizes from 10 to 56 1/2 hp. *Wisconsin Motor Corp.*

... for more details, circle No. 232 on postcard

POWER TRANSMISSION BELT

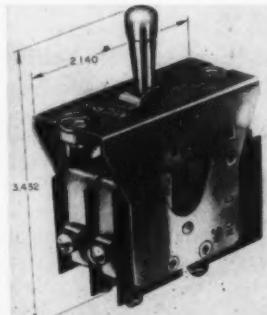
... operates at speeds to 24,000 ft. a minute

A new type of power transmission belt that will not slip or stretch; operates at speeds up to 24,000 ft. per min., horsepower up to 6,000, ratios up to 20 to 1 and arcs of contact as low as 90 deg., the Extremultus is a combination of two materials—a special type of polymer and a chrome-tanned leather. Used on the Continent for the last 15 years where it is said to have replaced 30% of the V-belts on that type of drive, it has been tested here on most difficult drives in the pulp and paper industry. The polymer in it has a tensile strength of 28,500 psi., with its modulus of elasticity 78,230 psi. The chrome-tanned leather carries none of the load, functions only as a friction surface. Other operating advantages claimed are smooth constant speed at low tensions and at relatively slow speeds, efficiency under shock loads up to seven times the normal running loads, and reduction of bearing loads. *Extremultus, Inc.*

... for more details, circle No. 233 on postcard

TOGGLE SWITCHES

... with safety catch to hold toggle lever



Safety catches to guard against accidental toggle lever movement are features of a new series of three-position toggle switches developed for use in mobile, marine, electronic and aircraft applications. The catch holds the lever in a "set" position, and a pull of about .109 in. is required to release the lever for movement. One switch, 111AT, has two basic switching units in each assembly, the other, 115AT, has four. All switching units have single-pole double throw arrangement. Other features include compact design, positively driven switch actuators and sturdy construction. *Micro Switch Div., Minneapolis-Honeywell Regulator Co.*

... for more details, circle No. 234 on postcard

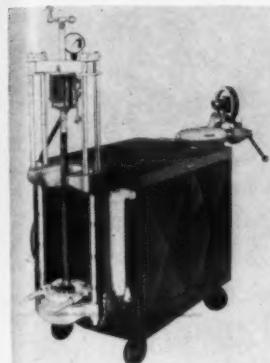
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PORABLE MAINTENANCE BENCH

... cuts down-time, speeds up maintenance



Easily moved by one man because of heavy-duty roller bearing casters, this mobile unit enables you to move tools to the job, thus saving down-time and speeding up maintenance operations by 95%. It can be securely locked to the floor by a floor lock brake. Made of all welded steel, it has a 3/16-in. top that absorbs heavy pounding, will support up to 2,500 lb., measures 24 x 36 in. Compartment area is

28 in. high, 17 in. wide, 23 in. deep to accommodate large tools, drills, pipe cutters, etc. Right side has large tool drawer and three shelves. A flush mounted handle, tamper-proof lock, a four-in. swivel vise and a 50-ft. retractable extension cord supply power to four outlet plugs that will accommodate drills, impact tools, trouble light, etc. *Wright Tool Co.*

... for more details, circle No. 235 on postcard

GREASE ADDITIVE

... improves lubricant performance

Developed to meet the demand for grease lubricants that will stand up under extreme temperatures, high loads and high speed is Oronite GA-10, a synthetic gelling agent that is a derivative of terephthalic acid. Greases normally made with sodium salt of GA-10 maintain their structure up to 600 deg. F. (compared to sodium stearate greases with a dropping point between 375 and 425 deg. F.) and where water resistant greases are required, the long-life of GA-10 grease has reduced lubrication down-time as much as 95%. Other conditions in which the grease has proved outstanding are in severe grinding, in wheel bearing tests with extreme temperatures and in automatic feeding systems. Lubricants made with GA-10 are said to last two to three times longer than others, and can take the place of several specialized greases for further economy. *Oronite Chemical Co.*

... for more details, circle No. 236 on postcard

15-GAL. VACUUM

... with 3-in. hose intake



A special intake that can be used with 1 1/2-, 2- and 3 1/2-in. hose allows the operator of this vacuum cleaner to switch from the smaller hose for light general vacuuming to the larger hose for heavy or bulky material. The cleaner is powered by a 1 1/3 hp. universal motor with a propeller design, increased cooling capacity, large sealed bearings and oversize carbon brushes. Delivers air movement of 240 cfm., air speed of 360

mph. and maximum static pressure of 72 in. Motor is easily detached for other uses. *Hild Floor Machine Co., Inc.*

... for more details, circle No. 237 on postcard

FAST DELIVERY

on NOPAK shelf-stock

AIR CYLINDERS!

Your choice of —

- 6 Mounting Styles
- 8 Bore Sizes
- 9 Stroke Lengths

When you specify NOPAK "Shelf-Stock" Air Cylinders you save money 3 ways:

1. You eliminate waiting for "specials".
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3. You get top quality NOPAK Air Cylinders at the lowest possible prices.

NOPAK "Shelf-Stock" Air Cylinders are available in a wide range of bore sizes and stroke lengths from 1 1/2" x 1" to 8" x 15". No other manufacturer offers such a wide range of selection in Brass Tubing, Precision Machined, Cushioned Air Cylinders at comparable prices.



MODEL "E"
with Clevis and
Mounting Bracket

NOW! 5" BORE

replaces the 4 1/2" bore in the NOPAK Shelf-Stock line, with no price change — extra cylinder power at no extra cost. Compare quality and prices, and you'll specify NOPAK. Write for Current Listings and Catalog 101.

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NOPAK VALVES and CYLINDERS

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The greatest name in Jacks—offers a jack for every job in industrial and construction use . . .

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- ★ RENTALS
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Our stocks include the top lines of industrial and construction equipment. Consult our... HYDRAULIC DIV. for engineering and design of specialized hydraulic equipment.



That's why we rent, sell, and service the SIMPLEX line, carrying a complete stock for immediate delivery.

phone or write for complete information . . .



... for more details, circle No. 94 on Reader Service Postcard

101

GENERAL ELECTRIC "CONTAINERIZES" scrap and waste as they accumulate...



Rome, Ga. Plant
"Containerizes"
Scrap and Waste
at Accumulation
Points...One Man, One
Dempster-Dumpster
Serve 36 Containers

Dempster-Dumpster Disposal System Serves Today's Industrial Leaders....

Industrial waste disposal has passed the day of manual shoveling, rehandling, shaky bins, wheelbarrows or cumbersome carts. General Electric and other leaders "Containerize" waste when and where it originates by using clean, big capacity, Dempster-Dumpster Containers. Tremendous savings in disposal costs are made with the one-man, one-truck Dempster-Dumpster which can service over a hundred accumulation points, picking up, hauling and emptying containers on a planned shuttle schedule.

Savings are so great that thousands of users, large and small have amortized their equipment investments in 18 months or less. If you are now using costly conventional methods of handling rubbish, waste and scrap in your plant, it will pay you to send for the free booklet below.

FREE: Write Today for Your Copy of
"How to Reduce Waste Disposal Costs."

DEMPSTER BROTHERS, Knoxville 17, Tenn., Dept. WI-11

To: Dempster Brothers, Dept. WI-11
Knoxville, Tennessee

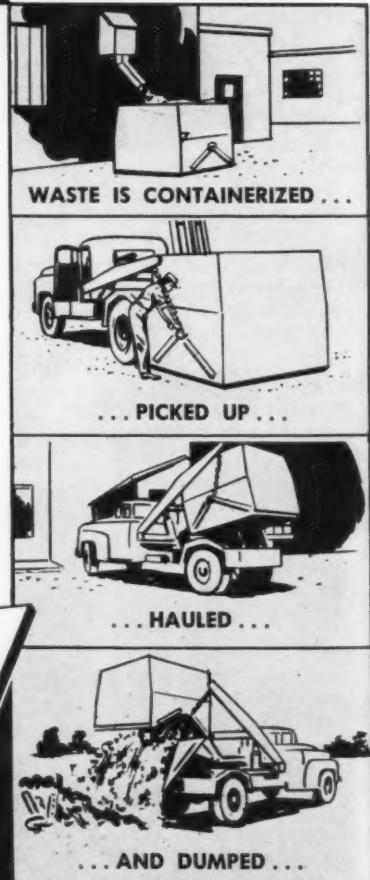
Please Send Without Obligation Your Booklet,
"How to Reduce Waste Disposal Costs."

NAME.....TITLE.....

COMPANY.....

ADDRESS.....

CITY.....STATE.....



... for more details, circle No. 95 on Reader Service Postcard
WESTERN INDUSTRY — November 1957

THE INDUSTRIAL WEST ON ITS WAY

plants • production • distribution • personnel

Robert Braun Co. Opens Two Branches

LOS ANGELES—Two new Southern California centers that will expedite delivery and service on rental fork lifts and other material handling equipment have been announced by the Robert H. Braun Co.

The new locations, which will serve as headquarters for radio-dispatched service trucks, mobile tire press, and rentals, are in Hawthorne at 12924 Yukon Ave., and in Long Beach at 1227-1229 W. Cowles St. In addition to providing better service in these industrial areas, the company has branches in Rialto, San Diego, and at 5519 Jillson St., here.

Uranium Processing Mill Slated In New Mexico

GRANTS, N. MEX.—A \$9,500,000 uranium processing mill is scheduled to be built 25 miles north of here by Phillips Petroleum Co of Bartlesville, Okla. Resulting from a contract signed by Phillips for the sale of uranium concentrates to the U. S. Atomic Energy Commission, the mill will have a capacity of some 1,725 tons of uranium ore per day. Construction is expected to start soon, with completion planned for mid-1958.

Eimco, American Foundry Acquired by Ogden Corp.

SALT LAKE CITY—The Eimco Corp. and the American Foundry & Machine Co. have been acquired by Ogden Corp., industrial holding company. Eimco manufactures diesel and pneumatically-operated overhead loading and excavating equipment, and filtration equipment for water treatment, chemical and mining processes. American Foundry is a producer of grey iron and steel castings, almost all of which are used by Eimco.

Big Industrial Site Sold

SACRAMENTO—One of the largest industrial sites yet sold in Sacramento County was that purchased recently by Sigmund L. Levin, Beverly Hills civil engineer and developer. Comprising 345 acres, it is at 16th and A Sts., adjacent to McClellan Air Force Base. Purchase price was \$569,000.

GE Expands Service Network with New Western Facility

OAKLAND, CALIF.—To meet the demands of expanding industry in the Bay Area, the General Electric Co. has opened a new \$750,000 service shop at 3400 Wood Street.

The new shop will inspect, maintain and repair electric equipment used by industry. Repair work on equipment ranging from $\frac{1}{4}$ -hp. to 15,000 hp. will be done with mass production techniques . . . allowing work to be completed in minimum time and with minimum efficiency, said Bruce C. Oliver, shop foreman.

The 20,000-sq. ft. facility is part of a network of G.E. service shops throughout the country. There are 12 major shops in the West and 19 sub-shops (the Oakland facility will be one of the largest sub-shops).

Layout and equipment in the Oakland facility is especially designed for the repair, overhaul or rebuilding of heavy electrical apparatus such as locomotive traction motors and generators, large motors and generators used by industries, and power and distribution transformers as well as small motors and other electrical apparatus.

Work areas and facilities are laid out so the work flow for various types of apparatus is contained largely within specific areas. This enhances efficiency by eliminating conflicts in the patterns of work flow.

A rail spur runs into one end of the shop to enable loading and unloading from freight cars in the shop and to facilitate locomotive repair work.

Special equipment includes a balancing machine of latest design for balancing all types of rotating equipment with a capacity up to seven tons; a 1,440-cu. ft. 600 deg. F. baking oven with a hydraulically-operated port in the top to accommodate crane slings that permits the heaviest pieces of apparatus to be deposited inside for baking after protective varnishing without handling by hand; a roller conveyor system in the transformer area connecting all work stations to simplify handling and facilitate production flow.

There are three overhead cranes with

a total 60-ton capacity. To avoid unloading and loading bottlenecks, there are twin doors for trucks at the locomotive pit dock and a side door capable of permitting truck and trailer rigs to drive into the shop.

Pick up service is available. The shop will be on call at all hours of the day and night, and work will be performed at the customer's site when necessary.

Spring Upturn Forecast at Western Pine Meeting

PORTLAND, ORE.—An improvement in business conditions for the lumber market by next spring was predicted at the semi-annual Western Pine Association meeting recently. Speakers included A. B. Hood, president, and W. E. Griffey, assistant secretary manager, who suggested the industry was "going through the worst of the slump" right now, and termed 1957 the roughest year for lumber since 1946. Hood warned the group that a merchandising job of huge proportions faced their industry.

GE Starts Computer Laboratory in Arizona

PHOENIX, ARIZ.—A computer applications laboratory is the newest section of General Electric's rapidly expanding Computer department operation. Situated on the Arizona State College campus at Tempe, it is designed to give industry, education and government a complete range of computational services capable of providing effective, economical solutions to entire problems, regardless of size.

Container Corporation Plant is First to Open in New Seattle Industrial Area

RENTON, WASH.—First major industrial plant in nearby Seattle's recently developed industrial section is the carton folding plant recently opened by Container Corp. of America.

Completion of the \$900,000 facility was marked by an open house attended by top company executives and civic leaders of this area. Among speakers at the event was Philip A. Strack, Puget Sound Industrial Development Council chairman, who outlined the concepts and progress of this industrial section, the Duwamish Waterway Area, which, at a cost of some \$24,000,000, will eventually provide vital new land for the Northwest's booming economy.

Situated some 16 mi. from downtown Seattle, the Container Corporation's one-story facility occupies eight acres of a 48-acre site. Employment at the 80,000-sq. ft. plant is 175 persons. It is served by four major rail lines.

The Renton plant produces folding cartons from paperboard from the firm's mills at Tacoma, Wash., Los Angeles and Santa Clara, Calif. Equipment includes multicolor printing presses, die cutting presses, waxing machines and high speed folding and gluing units. A special feature is the vacuum disposal system for delivering paper waste to baling machines for shipment and eventual reuse in paperboard production.

\$1,500,000 Sacramento Expansion by Grocers

SACRAMENTO—Total construction costs will be over \$1,500,000 for the 254,000-sq. ft. facility recently started by United Grocers Ltd., Bert McDowell Co. According to Charles Henderson, general manager, the construction in the Lawrence Industrial Tract on Fruitridge Road will include a 232,000-sq. ft. warehouse, a 15,000-sq. ft. office area and a 7,000-sq. ft. cold storage unit. It will replace the firm's present quarters at 10th and North B Sts.

Spring Load Occupies New Factory, Office

SEATTLE—Spring Load Manufacturing Corp. has moved into its new 10,000-sq. ft. building at 6332 Maynard Ave.

"Our decision to build a new plant was based on steadily increasing, nationwide demand in the plumbing and utilities fields for Spring Load time-saving tools," said J. J. Plesko, general manager.

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Nucleonics Firm Buys Acreage for Expansion

SAN RAMON, CALIF.—Continuing expansion of Aerojet-General Nucleonics' production, research and design facilities is scheduled on recently purchased land surrounding its present location. The company recently announced purchase of an additional two acres, with options and other purchasing rights on 389 acres.

Announcement was made by Dr. A. T. Biehl, technical director, and Robert A. Mainhardt, general manager of the company, which is the originator of mass produced nuclear reactors.

AGN moved into its present quarters about a year ago and has now mass produced and placed into operation ten reactors of the portable, low power AGN 201 type.

Union Oil Realigns Western Divisions

LOS ANGELES—Effective October 1, Union Oil Company's Pacific Coast field department has been realigned into three divisions, by consolidation of the former Coast and Ventura divisions, according to W. C. Butler, field operations manager.

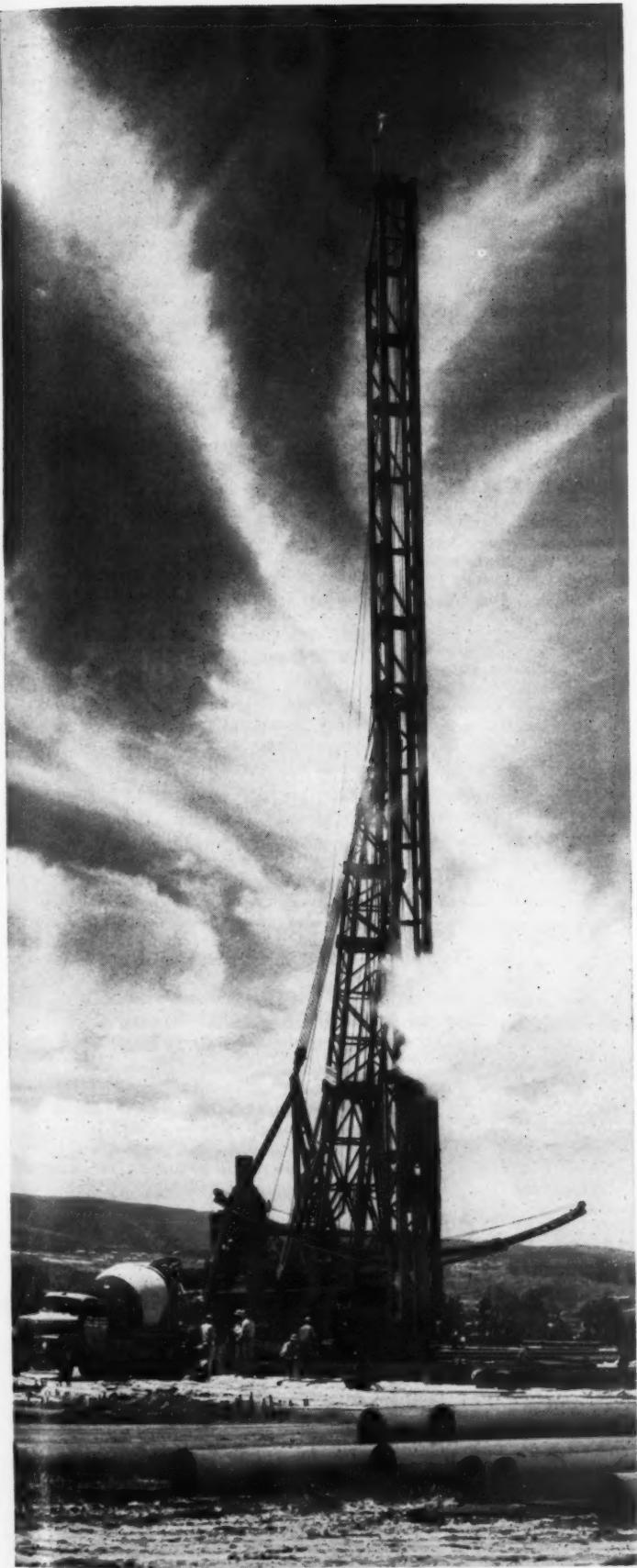
Under the realignment program, division superintendents will be: Southern—J. T. Ledbetter; Coast—C. E. Smith, and Valley—J. L. Stair, with John R. Fraser, former Valley division superintendent shifted to assistant manager of natural gas and gasoline operations.

C. F. Bowden is chief petroleum engineer and A. F. Woodward, chief exploitation engineer. Division engineers are: Southern—V. S. Moyer; Coast—F. R. Wade and Valley—C. A. Steiner. R. G. Smith and R. Wheeler will be assigned to secondary recovery projects.

Swedlow to Manufacture Solar Honeycomb Core

SAN DIEGO—Solar Aircraft Co. has licensed the Swedlow Plastic Co. to manufacture and sell its resistance-welded stainless steel honeycomb core in this country and Canada, with exclusive rights to Solar's honeycomb core process and machinery.

Solar will continue to make core for its own needs and will extend activities in the development and manufacture of honeycomb sandwich structures used in aircraft. Swedlow last February acquired all facilities, techniques and patents of the Honeycomb Structures Co., Inc.



POUNDING POWER- PLUS!

"Alfred the Monster" gives 600 lengths of Kaiser Steel pipe a pelting — as Raymond Concrete Pile Company drives a foundation for a huge new United Air Lines hangar at San Francisco Airport.

With a 32,500 foot-pound hammer mounted inside, 20-foot lengths of Kaiser Steel electric weld piling pipe are driven relentlessly into the ground by "Alfred the Monster," the giant universal piledriver in the picture at the left.

Almost 100 feet down they go, dragging behind them 76-foot lengths of light-gauge corrugated pipe.

Obviously, it takes rugged piling pipe to withstand the ordeal... which is a good reason why Raymond specified electric weld pipe from Kaiser Steel. Because, at Kaiser Steel, the quality of every pipe length is carefully controlled. Not only to measure up to standards of high strength. But also to meet unyielding demands for accuracy of dimension, straightness, concentricity.

You can depend on Kaiser Steel piling pipe to do the job *right*... every time!



BUILT TO SERVE THE GROWING WEST

... for more details, circle No. 97 on Reader Service Postcard

Stauffer Chemical Expands Plant in Richmond

RICHMOND, CALIF.—Expansion of its plant here to produce 50,000 tons of pelletized single superphosphate annually has been announced by Stauffer Chemical Co. To cost about \$350,000, the new plant will be in operation about next March producing the chemical in a uniform, pelleted, dust-free form. Until then growers will be supplied from Stauffer's Vernon, Calif., facility.



This VEEDER-ROOT Magnetic Counter Adds and Subtracts

Flip the switch up . . . the counter adds. Flip it down . . . it subtracts. And this 2-way countability makes this new counter a distinct asset to modern systems of automation, control engineering and stock control. Readily adaptable, easily installed and connected to existing circuits, the Veeder-Root "plus or minus" counter is a reliable double-check on the operation of machines, processes, systems.

—two of the SUPERIOR PRODUCTS supplied by—

FOR SOMERS PETERSON CO. Superior Products

representing in addition to the above—

- "American" and "Amerigear" Flexible Couplings*
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- "Kupfrian" Push-Pull Controls
- "Kahn" Test Stands and Dry Air Equipment
- "Taller & Cooper" Data Reduction Equipment
- "Lowell" Heavy-Duty Reversible Ratchet Wrenches

SAN FRANCISCO — 157-13th St. — Phone MARKET 1-2255
LOS ANGELES — 1501 Maple Ave. — Phone Richmond 9-6151

*Northern California Only

... for more details, circle No. 98

106

More Blackberries, Fewer Peaches and Plums Packed

PORLAND, ORE.—It's up for blackberries and down for peaches and plums this year, according to figures on the 1957 pack, issued by Northwest Canners and Freezers Association.

The facts on blackberries are that this year's pack is the largest since 1951, with an increase of 72% from last year's short production. A total of 231,146 actual cases was packed. Container size distribution showed a change with the 6/10 case size leading, showing 112,097 actual cases or 48% of the total. The 24/303 size represented 45%.

Figures on freestone peaches show this year's to be the smallest pack since 1951, with a reduction of 62% from the 1956 record pack. Actual case total is 381,162. Container size distribution remained about the same, with the 24/2½ case size amounting to 56%.

The score for canned purple plums is smallest pack since 1948, 57% reduction from last year, with 1,034,374 actual cases packed. Container size distribution showed a little change with slightly fewer 24/2½ case sizes used than last year.

Flexible STAINLESS STEEL CONNECTORS By AMERICAN

American Flexible Stainless Steel connectors convey corrosive materials at high temperatures. Types 316 and 321 alloys of flexible tubing with fittings and flanges attached.

USES: Conveying hot air, corrosive liquids, gases, while flexing, absorbing vibration, connecting misaligned ports, in chemical, food processing, distilling, pharmaceutical, and IN GENERAL INDUSTRY.

Ask for American Stainless Steel connector bulletin. A sketch, description of installation, quantity required, helps us make suggestions.

AN ANACONDA PRODUCT



AMERICAN STAINLESS ASSEMBLIES ARE
MADE TO CUSTOMER SPECIFICATIONS

Krafts Foods Plans \$3,000,000 Program

BUENA PARK, CALIF.—The Krafts Foods Co. plant now under construction here will call for some 30 acres under one roof, making it the largest plant of its kind in the world. The expansion program is to cost \$3,000,000. Site of the plant is at Artesia and Knott Avenues, part of the 480-acre Harvey Ranch.

New Line-O-Coat Facility Will Double Production

COMPTON, CALIF.—Doubled production capacity will be possible for Line-O-Coat Industrial Co. with new engineering and manufacturing facilities it now occupies, according to Allen Burger, president.

Located at 1230 So. Santa Fe, the plant covers 10,000 sq. ft. The firm manufactures all types of corrosion-resistant, fiberglass reinforced, plastic air-handling industrial equipment.

Key administrative personnel include Lee Gallagher, chief engineer; Richard Sheets, plant superintendent, and Joe Kempker, sales manager.

Clary Corporation Consolidates Activities

SAN GABRIEL, CALIF.—Clary Corporation has consolidated its Aircraft Division and Automatic Controls Division into a single unit to be named Clary Dynamics.

Paul J. Meeks, vice president of Clary Corporation, will be general manager of the new division that will develop and manufacture aircraft and guided missile components. Brian Sparks will be assistant general manager.

Fletcher Sales Named David Round Distributor

BERKELEY, CALIF.—Fletcher Sales Co., a recently formed firm, will take over sales representation and warehousing of David Round hoisting equipment and related products. The new company was founded by Thomas A. Fletcher, formerly associated with J. C. Fennelly Co., San Francisco, which recently handled the David Round line. Headquarters are at 2216 Fifth St., Berkeley.

... for more details, circle No. 120

WESTERN INDUSTRY — November 1957

New Warehouse for Rich Steel Co.

LOS ANGELES—The Rich Steel Co. has announced construction of a \$250,000 warehouse and office facility at 5930 Bandini Blvd. Centered on a 2½-acre site to provide for future expansion, the 30,000-sq. ft. building is designed with column footings to allow for construction of additional bays on either side of the warehouse.

Rich Steel, warehouse distributors of carbon sheet, strip, bars and tin mill products, is installing two 7½-ton bridge cranes, plus crane scales, to facilitate loading, unloading and weighing at the plant. A railroad spur comes into the end bay and there are two 20-ft. drive-through truck bays.

Construction is expected to be completed this month. Present facilities of the firm are at 8011 Beach St.

Chase Brass Moves Into New San Francisco Quarters

SAN FRANCISCO—Operating from a new warehouse and district sales office at 230 Shaw Road in South San Francisco is the Chase Brass & Copper Co., which recently moved from outgrown quarters at 680 Second St. The new building is a 62,000-sq. ft. one-story concrete structure equipped with the latest material handling equipment such as three-ton capacity overhead cranes. Recessed loading docks with adjustable dock boards can accommodate up to six long truck and trailer rigs.

Safeway Distribution Center

CLACKAMAS, ORE.—Safeway Stores, Inc., has let the contract for a \$3,000,000 distribution center, scheduled for completion in 18 months. The project will encompass more than 12 acres under roof, in five integrated buildings.

Portland Brass Foundry

PORLTAND, ORE.—A one-story, 12,000-sq. ft. foundry building is being built by Central Brass Iron & Foundry Co. at 3401 N. Columbia Blvd., at a cost of \$24,000.

RIGID

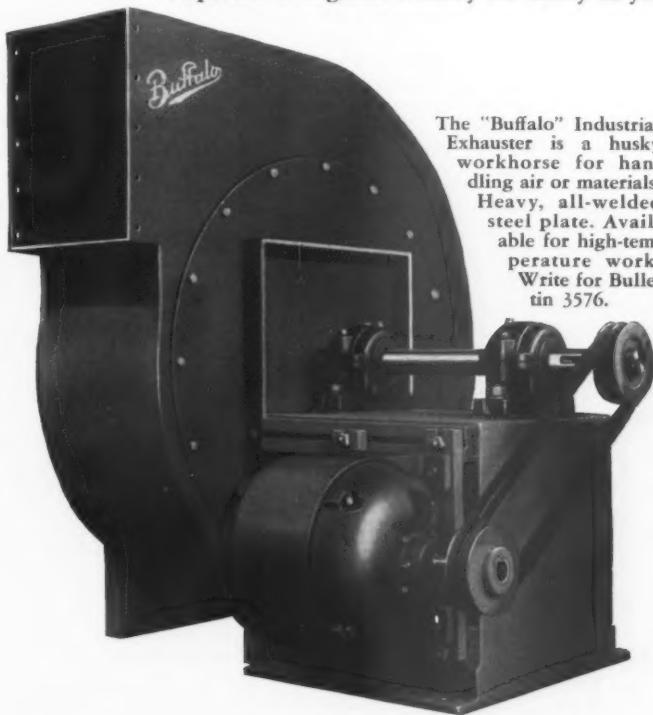
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WESTERN INDUSTRY — November 1957



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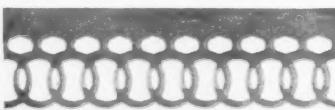
108

Hooker Chlor-Alkali Plant Begins Production

VANCOUVER, B. C.—Now in its first month of operation is the first chlor-alkali plant West of the Canadian Rockies, a \$12,000,000 caustic-soda plant built by Hooker Chemicals Ltd. Located on a 110-acre site built up from tidewater land, it has a daily capacity of 110 tons of caustic soda, 100 tons of chlorine and 1,000,000 cu. ft. of hydrogen for use by the pulp and paper, chemical, plywood adhesive and other industries. The facility consists of 12 major buildings, covering 70,000 sq. ft. and employs 100 persons.

Pacific Scientific Appointed by Pennsalt

PHILADELPHIA — Pennsalt Chemical Corp. has named Pacific Scientific Co. to represent its new line of Isotron refrigerants. The California firm will operate from sales offices in Los Angeles, San Francisco, Portland and Seattle, servicing both the refrigeration replacement trade and the original charge industry throughout seven Western states. Pacific Scientific specializes in industrial, air conditioning and heat treating equipment.



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Monroe Calculating and Litton to Merge

BEVERLY HILLS, CALIF.—Merger plans of Litton Industries and Monroe Calculating Machine Co. have been announced by the two firms. In joining Litton, Monroe brings to that company over 350 sales and service branches in this country, several dealer outlets and foreign subsidiaries throughout the world, plus four research and manufacturing facilities. Monroe sales for the current year are estimated at more than \$40,000,000.

Litton, a major electronics company, operates 12 laboratory and manufacturing plants. Agreements to acquire Maryland Electronics Manufacturing Corp. and Aircraft Radio Corp., were also recently announced by Litton, as well as plans for two additional mergers soon.

Increased Isobutane Output for Standard Oil

EL SEGUNDO, CALIF.—An increase of 300 barrels daily of isobutane is expected by Standard Oil Co. of California, Western Operations, Inc., when its new natural gasoline deisobutanizer is in operation. Construction of the \$250,000 facility began in September and completion is set for Dec. 15.

Convair Shifts to New Plant

SAN DIEGO—Some 800 employees at Convair Astronautics are on the move as the Astronautics division is being shifted to its new plant at Kearny Mesa. Initial moves for the most part are interim ones, with later shifts planned as construction progresses.

Huck Manufacturing Buys Western Site

NORWALK, CALIF.—A 5 1/2-acre site has been acquired by Huck Manufacturing Co., manufacturer of fasteners and related tools.

The action is part of Huck's program of long-range planning, prompted by increased Western activity, announced A. W. Armour, president.

Whitney



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WESTERN INDUSTRY — November 1957

L. A. Young Adds Link Radio to Gonset Division

BURBANK, CALIF.—Latest step in the diversification program of L. A. Young Spring & Wire Corp. is the purchase of Link Radio Corp. of New York, which will be moved to Young's Gonset division here. The acquisition gives Gonset, producer of communications electronic equipment, a complete line of AM and FM mobile radio equipment.

Key engineering, manufacturing and sales personnel of the Link firm have joined the Gonset division, said *N. E. Ely*, president of L. A. Young, and the Gonset engineering staff will be additionally enlarged to broaden the present product line and for development of new products. The work force of the Burbank plant is also expected to increase.

Gonset division produces amateur mobile radio equipment, communications products for civil defense and military use in aircraft, amphibious landing craft and waterproof vehicles.

Beckman Reorganizes Semiconductor Lab Set-Up

FULLERTON, CALIF.—To provide for increased production and continuing research, Beckman Instruments, Inc., has reorganized its Shockley Semiconductor Laboratory. In the realignment program, *Maurice C. Hannafin* has been named to manage the laboratory located at Palo Alto and Mountain View, Calif., where the new four-layer switching diode is produced.

Beckman Instruments also recently announced acquisition of the stock of Arnold O. Beckman Inc., of South Pasadena, Calif., which manufactures oxygen analyzers and employs about 100 persons.

Anaconda Wire & Cable Schedules Expansion

ORANGE, CALIF.—An expansion project announced by Anaconda Wire & Cable Co. will consist of a multi-million dollar building covering 622,000 sq. ft. Plans feature a 572,000-sq. ft. production building designed for ultimate expansion to over 1,000,000 sq. ft. To be constructed on a 63-acre site at Grove and Batavia Sts., the buildings will be completed over a three-year period.

Canco-Libby Warehouse

SACRAMENTO—An 80,000-sq. ft., \$500,000 warehouse is to be built by Libby, McNeill & Libby and American Can Co. on 32nd St., between Stockton Blvd. and Casita St. It will provide storage space for cans that will be carried by a cable type conveyor via an overhead bridge across Stockton Blvd. to the cannery.

Report on Oakland Industrial Park Under Study

OAKLAND, CALIF.—Under study by the Port of Oakland board of commissioners is a report on the economic feasibility of establishing a Port of Oakland industrial park between the Eastshore freeway and International airport.

Presented to the board by Stanford Research Institute, the report consists of results of a final study about development of a proposed 1,000-acre controlled industrial district. Object of the study was to develop a factual basis for planning the organized district and related facilities.

Findings of the SRI study indicated that the project is economically feasible and will result in 15,000 to 20,000 new jobs with payrolls amounting to some \$600,000 to \$900,000 annually.

Conclusions of the study include rental income sufficient to cover development costs can be generated; development can be undertaken by the Port independently, jointly with a developer or by a developer alone; the property is highly suitable for a produce center, and increased use of the Port and airport facilities will bring revenue.

Plus employment and payroll benefits, advantages may include \$4,000,000 in new construction and new tax revenues of \$2,000,000.

PIE Gets Fleet of 100 Aluminum Vans

OAKLAND, CALIF.—Pacific Intermountain Express has added a \$1,000,000 fleet of 100 aluminum trailers, each 40-ft. unit weighing nearly a ton less than conventional aluminum vans of the same size. Cubic capacity of the new trailers is 2,600 sq. ft. Made by Brown Trailers, Inc., the units have an air-ride system which eliminates road shock. PIE will use the fleet to service its 17,000 mile route in the Western two-thirds of the United States.

Another Electronics Firm Begins in Bay Area

SUNNYVALE, CALIF.—With recent ground-breaking ceremonies for a \$250,000 plant, Holbrook Merrill Co. became the sixth new electronics industry to locate here in the last year. Situated in Sunnyvale's Electronic Park on Kifer Road, the new facility will provide 40,000 sq. ft. of manufacturing space plus a 3,000-sq. ft. office area. Initial employment is to be 100 persons.

Holbrook Merrill, manufacturer of custom sheet metal products, will emphasize design and fabrication of sheet metal parts and housings for the electronics industry at the new plant.

According to *Charles H. Merrill, Jr.*, president, the firm is a unique combination of job shop and production plant, building metal work in prototype as well as fairly large quantities. Production runs of 100 units of a specific item are typical.

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Expansion Program for CG Electronics Corp.

ALBUQUERQUE, N. M.—Production facilities equal to five times the original manufacturing space will result from the expansion program of CG Electronics Corp., according to an announcement by *Harold Poulsen*, vice president and general manager.

The expansion is the result of the firm's acquiring a machine shop here that will enhance production ability, principally electroplating and printed circuit activities. The firm is a leading producer of radio control equipment specializing in transistorized and miniaturized equipment for the hobby field and industrial instrumentation.

CG Electronics operates as a wholly-owned subsidiary of Gulton Industries, Inc., of Metuchen, N. J., which acquired the firm in July.

Asco Valve Distributor

SAN FRANCISCO—Terco Equipment Co., 939 Howard St., has been named by Automatic Switch Co. as authorized stocking distributor for Asco solenoid valves. Authorized Asco representative in this area is the Paul S. Everley Co., 550 Ninth St.

Fort Worth Steel Moves

SOUTH SAN FRANCISCO—Nearing completion in this city's industrial park are new quarters for Fort Worth Steel & Machinery Co. The new structure will give twice its present space to the firm, manufacturer of power-transmission and material handling products.

New Plant for Mipro Metal

SAN FRANCISCO—Mipro Metal Products Co. last month began construction of a 25,000-sq. ft. plant in South San Francisco. Completion is scheduled for March. Products to be manufactured at the facility are waste and sanitary receptacles, steel cabinets and specialty products.

San Francisco Industry Continues Expansion

SAN FRANCISCO.—Continued industrial expansion in this city during the first half of 1957 was marked by total commitments of \$12,849,500 in which 81 new manufacturing plants and expansions were scheduled. The number of projects exceeds the 51 scheduled during the similar period in 1956, although the total sum is \$898,260 less than last year's figure of \$13,747,760.

The cumulative total, however, shows a steady trend in industrial development, according to the report of the Industrial Department of the San Francisco Chamber of Commerce.

In the 13 counties which make up the Bay Region, commitments totaled \$160,705,490 against last year's all-time record total of \$253,378,900, with 408 projects against 300.

Northern California's 48 counties accounted for \$169,394,840, involving 475 projects, against \$279,394,363 and 392 projects for the first half of last year.

Chemical Lime Co. Begins Production

PORLTAND, ORE.—Now in production after an opening for public inspection in October is the Chemical Lime Company's \$2,000,000 plant near Baker, which is designed to produce 75,000 tons of chemical lime annually. Said to be the only one of its type in the Northwest, the plant will produce lime for use in the manufacture of sugar, glass, steel, aluminum, paper products and agricultural processes. About 25% of production will be hydrated lime. A dry ice plant is also contemplated for use of the plant's by-products.

Westinghouse Names Alaska Distributor

ANCHORAGE, ALASKA.—Northern Supply, Inc., 400 Post Road, has been named by Westinghouse Electric Corp. as an agent-distributor to serve industrials, utilities and contractors in the Territory of Alaska.

Announcement came from Walter J. Maytham, Pacific Coast vice president of Westinghouse. Products to be handled include electronic tubes and welding equipment and standard electrical apparatus such as transformers, motors and switchgear.

H. A. Faroe is president of Northern Supply, which has been an electrical establishment here for 20 years.

Western Electro-Mechanical to Represent Two Firms

OAKLAND, CALIF.—Western Electro-Mechanical Co., Inc., 300 Broadway, has been appointed Northern California representative for Cramer Controls Corp., and for United Electric Controls Co., Eastern firms. Cramer manufactures synchronous timing motors and electrical timing devices for industrial applications. United Electric's products are temperature pressure and vacuum controls. Western Electro-Mechanical has set up an outside sales force and a service and engineering department to handle the two lines.

Liquid Gas Plant

PORLTAND, ORE.—The Pacific Northwest's first liquid oxygen, nitrogen and argon producing plant is now in production. The 25-ton capacity facility was completed recently by Industrial Air Products Co.

Stillman Expansion Ups Production Capacity 100%

FULLERTON, CALIF.—A two-phase expansion program that has increased production capacity 100% was completed by the Extruded Products Division of Stillman Rubber Co. with its move into a new 10,000-sq. ft. building at 1222 E. Ash St.

First phase was a move earlier this year to a 7,000-sq. ft. building. Currently the division's activities are consolidated in three adjacent buildings and total covered factory area is 20,000 sq. ft.

The division specializes in producing extruded rubber products compounded from all rubber and rubber-like material. It has also entered the plastic extrusions field.

Fire Brick Factory Opens in Idaho

TROY, IDA.—The A. P. Green Fire Brick Co. is beginning operations in a new factory in Latah County, Idaho. Fire clays from the area will be fashioned into brick for sale in the West.

Firebrick will be made by the dry press process and will be fired in down-draft kilns. The company will manufacture and sell a diversified line of refractories.

Construction Starts in Cypress Park Industrial Area

COVINA, CALIF.—First building in a 31-lot subdivision for light industry was begun recently and will be occupied by Arce Brothers Co., developer of the area to be named Cypress Park. Eventually slated to contain 15 to 20 different companies, employing 300 to 500 persons, the area will be particularly suited for plants from 5,000 to 15,000 sq. ft. Buildings will be built for lease and factory sites will be sold to firms that fit into the park's general plan. The development is six miles from La Puente, in the center of the East San Gabriel valley.

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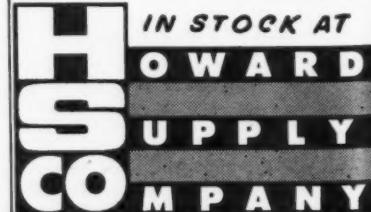
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Douglas Begins \$2,233,000 Facility

LOS ANGELES—Under construction near International Airport here is a \$2,233,000 building for Douglas Aircraft Co., which will house all publications activities as well as a jet flight simulation center.

Due for occupancy next April, the facility is on a 40-acre tract at Aviation and Compton Blvds. In one 168,000-sq. ft. building Douglas will concentrate all activities in connection with publishing handbooks, technical manuals, etc.

The second unit of the project will contain the most detailed jet flight simulator yet built. Within it, flight personnel will be trained in handling DC-8 jet airliners now being assembled at the Douglas Long Beach division.

Bedline Buys Young's Frame and Cot Division

BELL GARDENS, CALIF.—Bedline, Inc., a division of Central Welding and Mfg. Co. has announced purchase of the bed frame and cot division of L. A. Young Spring & Wire Corp. at San Leandro.

Machinery, fixtures, dies and other assets of the Young division will be housed in a newly-constructed 20,000-sq. ft. plant, which will bring the Bedline facilities to about 50,000 sq. ft., plus three acres of outdoor area. Young's sales, service and distribution operations will be taken over by Central Welding, and a sales service and storage branch will be opened in the San Francisco area.

F. J. Hearty & Co. Changes Name

LOS ANGELES—The new name of the F. J. Hearty & Co. is *Paul Bradfield & Co.* Coincidental with changing its name the firm moved to new quarters at 864 Robertson Blvd.

The firm is widely known as sales representatives for Edward Valves, Inc., subsidiary of Rockwell Manufacturing Co., and other manufacturers supplying equipment to the power, industrial, petroleum and marine fields.

Firestone Expansion Plans

PORLTAND, ORE.—Two tilt-up concrete structures are being built by Firestone Tire & Rubber Co., 18129 N.E. Wilkes Road, at an estimated cost of \$600,000. One is a 112,000-sq. ft. warehouse and the other a 40,000-sq. ft. tire retreading plant.

Portland Novelty Firm

PORLTAND, ORE.—A novelty manufacturing firm, Programinder Co., is now in business at 6032 S.E. Milwaukee Ave.

Weston Adds Branch in San Francisco

SAN FRANCISCO—Sales and service facilities of Weston Electrical Instrument Corp. are expanding to meet demands of the West's aircraft, electronic, processing and other industries, with addition of a branch at 147 Tenth St.

The new facility includes high precision test equipment for the calibration and repair of Weston's electrical and electronic instruments, aircraft and industrial process instruments and photographic exposure meters. Factory warranty service for exposure meters will also be offered at this branch, which supplements the facility maintained in Los Angeles by Weston, a subsidiary of Daystrom, Inc.

Borax Research Lab Has Final-but-Expandable Design

ANAHEIM, CALIF.—A laboratory designed primarily to permit vast future expansion, but one that presently has a "final" look, is the building recently completed for Borax and Chemical Corp. here. The research laboratory is divided into four different, semi-separate segments, each housing a specific Borax research function. Built at a cost of \$850,000, it is of reinforced concrete and covers 30,000 sq. ft.

New Group to Control Aircraft Components Firm

PASADENA, CALIF.—Vard, Inc., one of the nation's largest manufacturers of precision electro-mechanical equipment for the aircraft industry, has been purchased by a group headed by John A. Swint, former Ford Motor Co. production executive.

A new board of directors has been named. It includes M. L. Bengtson, president of the Hufford Corp.; Donald Royce of Wm. R. Staats & Co.; Hans de Schulthess and Swint, all of Los Angeles; Major General (Retd.) Frederick L. Anderson of Palo Alto and Major General (Retd.) Pierpont Morgan Hamilton of Santa Barbara.

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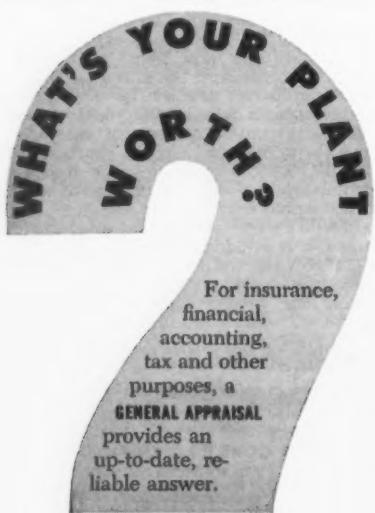
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The Big Squeeze



JUST LIKE SQUEEZING TOOTHPASTE, this huge 270,000-lb. extrusion press exerts pressure on red-hot brass billets to squeeze them out to dies of the desired shapes. Shown here being assembled in the Titan Metal Manufacturing Co. brass mill at Newark, Calif., the press has a "thumb"—the giant hydraulic assembly being lowered—consisting of oil tank, pumps and electric pump motors. It can exert a peak pressure of 1,870 tons on billets heated to about 1,500 deg. F., forcing the hot metal through heavy steel dies to produce extrusions. Only brass mill in Northern California, the Titan facility began production in October, with full production scheduled for mid-December.



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112

Two California Firms Acquired by Haveg

WILMINGTON, DEL.—Haveg Industries, Inc., manufacturer of chemical corrosion-resistant plastic equipment, has recently announced acquisition of the Lithgow Chemical Co. of California, and Reinhold Engineering & Plastic Co., Inc., of Norwalk, Calif.

According to Dr. John H. Lux, Haveg's president, addition of Reinhold, producer and fabricator of plastics for the aircraft missile industry, as well as chemical corrosion equipment, will enable Haveg to extend its West Coast services. By acquiring Lithgow, the firm will broaden its line of coatings and get substantial new Western production facilities. Lithgow, which will be operated as a Haveg division, has specialized in thermosetting and thermoplastic coatings used in construction, chemical plants, laboratories, textile mills, wineries and many other industries.

\$8,500,000 Copper Mill Scheduled in Northwest

NEW WESTMINSTER, B. C.—An \$8,500,000 copper tube and rod mill, first such mill in Western Canada and the Pacific Northwest is to be built near here. Western Copper Mills will build it and the copper supply will come mainly from the Tacoma, Wash., smelter of American Smelting and Refining Co.

North American Sets Up Marketing Organization

SANTA MONICA, CALIF.—Navan Products, Inc., is the name of a marketing and licensing organization established as a wholly-owned subsidiary by North American Aviation, Inc.

Headquartered at 1318 Second St., the firm will handle specialized products developed by divisions of North American or other companies.

Heading Navan will be A. T. Burton, North American vice president of military relations. Other officers are also officers of the parent company. W. L. Beach, who has been with North American for 16 years, is manager of operations and sales.

Crescent



Wrenches



...for more details, circle No. 111

Harvey Aluminum Contracts for Raw Material Supply

THE DALLES, ORE.—Harvey Aluminum Co. has contracted with three Canadian shipping firms to deliver approximately 13 cargoes of alumina yearly to Harvey's new reduction plant here, an arrangement that will make this Columbia River city a regular seaport of call for bulk-carrying ocean vessels.

The Canadian carriers will load their cargoes in Japan and discharge at a dock now being constructed at the Harvey plant northwest of here. To facilitate this, the aluminum company is building a large, barge-mounted pneumatic unloading system that will suck the alumina from the ships' holds and pump it ashore to storage silos.

Shipping firms engaged in the five-year contract are North Pacific Shipping Co. Ltd., Anglo-Canadian Shipping Co. Ltd., and Western Canada Steamship Co., Ltd.

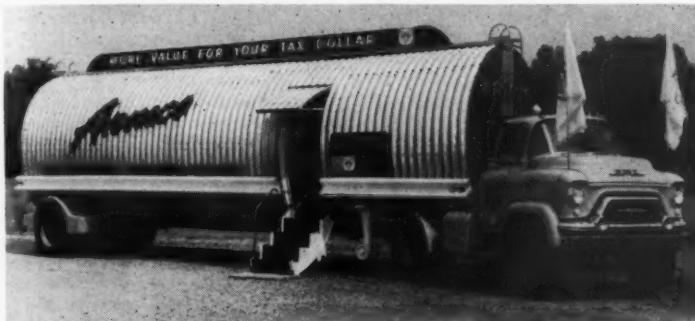
Flexible Tubing Plant

ANAHEIM, CALIF.—Slated for construction in the Muller Brothers' tract is a 16,300-sq. ft. facility to be built by Flexible Tubing Corp., Western Operations.

Plant and equipment are scheduled to cost more than \$400,000.

The new facilities will permit the firm to supply air-frame manufacturers with its ducting products, including silicone and neoprene ductings.

Steelmobile Trailer Exhibit



SHAPED LIKE A HUGE METAL PIPE, this Armco Steelmobile trailer houses 16 exhibits of municipal construction products and service. During the next 16 months it will cover 50,000 miles, hitting Northern California cities this month. Simulating corrugated pipe such as the company produces for sewers, culverts, etc., it is 35 ft. long, 8 ft. wide, over 12 ft. high, and weighs about 22,000 lb. The interior of the trailer includes a conference area, and displays showing the company's products in full scale, such as a high-flow capacity sewer pipe demonstrated by a circulating water system.

Victoreen of Cleveland Buys Jordan Electronics

ALHAMBRA, CALIF.—Jordan Electronics, Inc., manufacturer of nuclear radiation instruments, area monitoring systems and industrial radiation detection equipment, has been purchased by the Victoreen Instrument Co. of Cleveland. Announcement was made by David H. Cogan, president of Victoreen, which manufactures and distributes radiation measuring instruments, reactor control systems and electronic component parts.

In acquiring Jordan, Victoreen will get a widely expanded products base and much-needed Western engineering and production facility, Cogan said. The present Jordan management will continue operations in a modern plant built in 1955.

Mattress Assembly Plant

PORLTAND, ORE.—Among new industries here is the No Sag Spring Co., 424 N. Tillamook St., cushion spring and mattress assembly plant.

Whitman & Barnes

Drills

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WESTERN INDUSTRY — November 1957

Soule Builds Huge Steel Depot for Convair

SAN DIEGO—The West's largest rigid-frame steel structure is the new home erected by Soule Steel Co. for Convair's parts and material depot here. Covering 600,000 sq. ft., the huge facility is a landmark in this city's industrial area and was put up ready for use in just five months, a record in construction time for projects so large.

Located in Rose Canyon just north of here on Highway 101, the depot is quickly accessible by super-freeways to Convair's extensive local plants. It consists of a series of rigid frame structures side-by-side and end-to-end under one continuous roof, forming the largest area of covered storage ever achieved with steel building construction.

New Extrusion Co. Begins Operations

GARDENA, CALIF.—A new aluminum extrusion operation has been started here by Western Extrusion Co., 1439 W. 178th St. The plant is on a seven-acre site that allows for expansion.

Jayson Yorday is plant manager and Paul Rasako is production manager.

Pacific Semiconductors Adds Fourth Building

CULVER CITY, CALIF.—In a move to provide added production facilities, Pacific Semiconductors, Inc., will take over a fourth building. The new facility is located at 10555 Virginia Ave., and it will provide space for offices, leaving more room at the main plant.

PSI is a subsidiary of The Ramo-Woolridge Corp. and an affiliate of Thompson Products, Inc.

Summit Industries Open Gardena Plant

GARDENA, CALIF.—Summit Industries, Inc., has opened a plant at 2104 West Rosecrans Ave., for aircraft assembly operations, such as wing tips, crash pad panels, radomes, etc., using plastic and metal. Facilities for manufacture of plastic products for both military and civilian products are available. Albert S. Greenberg, president of Summit, formerly was with Zenith Plastics Co., here, as was E. Chris Mireau, vice president.

New Firm in Portland

PORLTAND, ORE.—The firm of Al D. Swanson for manufacturing bed frames and survey stakes has recently started at 603 S.E. Umatilla St.

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Delta Lines Expansion in Stockton

STOCKTON, CALIF.—Under construction by Delta Lines are new terminal facilities that will provide 2,400 sq. ft. of office space and a dock 160 x 60 ft. Cost for the expansion is to be more than \$170,000. Complete repair and maintenance facilities, plus fuel and lubrication equipment, are to be installed as part of complete Delta facilities.

Estee Battery Doubles Space

LOS ANGELES—Estee Battery Co. has doubled its manufacturing facilities in a move to new quarters at 415-417 Moline. The move marked the 25th year of business for the firm, manufacturer of batteries for golf-course electric carts and a complete line of wet storage batteries.

Microfilm Plans New Branch

LOS ANGELES—Scheduled for completion this month is a new branch for the Microfilm Business Systems, Co., engaged in microfilm contract services, reproductions, film processing, equipment, etc. The new facility is at 5810 West Adams Blvd. and headquarters are at 7513 Melrose Ave. *W. R. Ware* and *Gloria P. Ware* are partners in the concern.



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Packard-Bell Adds Missile Equipment Section

SANTA MONICA — Packard-Bell Electronics Corp. has announced addition of a newly-built 21,000-sq. ft. facility to house a missile equipment section, after being awarded additional contracts for ground test and launching equipment for the Douglas "Thor" intermediate-range ballistic missile. The facility is at 2341 Michigan Ave. *Robert S. Bell* heads the firm and *Richard B. Leng* is vice president in charge of the technical products division.

G. K. Machinery is New Firm in Boise

BOISE, IDAHO—G. K. Machinery Co., 5200 Federal Way, is a recently organized firm with complete facilities for sales and service of heavy duty industrial equipment. Major lines handled are Letourneau-Westinghouse, Worthington Corp., J. I. Case, American Hoist & Derrick. Supply accounts include Shovel Supply Co., Winslow Scales, Murphy Scales and Columbia Steel Casting. *Leland Knudson* is president, *L. W. Gurr*, vice president and *L. W. Slack*, manager.

Davis Firm Builds Warehouse

PORLAND, ORE.—A one-story tilt-up concrete warehouse is being built by Dan Davis and Company, 3400 S.E. 17th Ave. Estimated cost for the 20,000-sq. ft. structure is \$100,000.

Farmland Irrigation Moves from Portland to San Jose

PORLAND, ORE.—A move to San Jose, Calif., for the Farmland Irrigation Co. has been announced by *C. E. Henry*, president. Manufacturing operations will move soon to 64 McClellan St., San Jose, where the firm is remodeling leased quarters. Capital investment in the new plant will approach \$100,000. Farmland's line of sprinkler irrigation products include Wheel-Move, Wheel-Trac, Stoutbilt and other systems.

Cascade Mfg. Co. Expands

PORLAND, ORE.—A major expansion program to increase sales in this country and abroad has been announced by Cascade Manufacturing Co., manufacturer of hydraulic lift-truck attachments. According to *Robert C. Warren*, president, the firm will set up a national sales organization with resident and regional sales managers, under supervision of *William E. Tharp*, who has been factory manager the last four years.

Sub-Office for Trane

SAN DIEGO—The Trane Co., La Crosse, Wis., manufacturer of air conditioning and heating equipment, has established a sub-office here. *Ralph C. Snow*, who has been a sales engineer in the Trane Los Angeles office for 11 years, will be in charge of the new branch.

WESTERNERS AT WORK . . .

American Manganese Steel Div., American Brake Shoe Co.

... appoints *Stanley Marwin* as assistant works manager of the Los Angeles plant. Formerly assistant to the works manager, he has been with the Amsco Division since 1934, and has held numerous positions in production and supervision at various plants in the division.

Tidewater Oil Co.

... designates *James McDonald* as administrative manager of manufacturing. Formerly assistant manager of Tidewater's new Delaware refinery, McDonald will make his headquarters in San Francisco.

American Can Company

... names *Carl J. Rach* as manager of the Canco plant in San Jose. Rach, formerly assistant plant manager at Canco's plant in Los Angeles, is a 21-year veteran with the can-making firm. He succeeds *R. D. Ronketti*, former San Jose manager, who has been transferred to the Northwest to manage Canco's plant in Seattle, Wash.

The Garrett Corp.

... AiResearch Manufacturing Co. names *J. J. O'Brien* as manager of the Phoenix, Ariz., facility. O'Brien, formerly manager of the Garrett Corp.'s AiResearch aviation service division, Los Angeles, joined the company in 1951. *Harrison Holzapfel*, who had been assistant manager of the AiResearch aviation service division for the better part of a year, was named to succeed O'Brien as manager.

Woodbury & Co.

... announces the appointment of *Lee Chase* as superintendent of warehouse in Portland. Chase will be in charge of storing, handling, shipping, receiving and processing of all stocks. He will continue as manager of the steel warehouse, a post he has held the past two years.

Black & Decker

Electric Sanders

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COMPANY

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Ducommun Metals & Supply Co.



Joseph Shelton
...announces the appointment of Joseph Shelton to general manager of sales of the Los Angeles division. Shelton will develop, organize and direct the sales programs of the company's main office in Los Angeles. He will be assisted by a staff of six sales managers and more than 130 outside and inside salesmen.

Dalmo Victor Co.

...forms a new hydraulic division under the direction of R. J. Stahl, formerly assistant to the President. The new division will be responsible for engineering, manufacturing and sales of hydraulic servo valves and other Dalmo Victor hydraulic products.

Fabriform Metal Products

...adds to its sales staff as technical sales engineers Clark Bamber, employed for more than 10 years after the war by the National Cash Register Co., and George Corbett, who worked for a period with Douglas Aircraft Co. and has five years experience in the wholesale field. Fabriform, a Los Angeles firm and a division of George Getz Corp., is a leading furnace brazing company.

Pacific Intermountain Express

...has two new branch managers in the Northwest: E. L. Kendall, in charge of the motor carrier's tanker operation at Spokane, Wash., and E. A. Henderson, assigned to the same position at Seattle. Both are veterans in the trucking industry.

Calstrip Steel Corp.

...has a new plant manager in the person of Bernard Campbell, who has had 25 years' experience in eastern and Canadian steel mills.

R-P & C Valve Div., American Chain & Cable Co.

...assigns C. M. Hause and E. P. Newsted as district sales managers in Los Angeles and San Francisco, respectively. Hause has been associated with the firm for four years as a valve salesman in Los Angeles; Newsted joined the firm in 1953 as a valve salesman and became assistant district sales manager in San Francisco in 1956.

California Oxygen Co.

...appoints John J. Brehaney as chief engineer of all company liquid gas plants throughout California, with headquarters at the firm's newest office at 511 So. Fullerton Rd., La Habra. Now newly established at La Habra for the firm are executive office and manufacturing facilities, and a retail store offering a complete selection of welding equipment and supplies for the Orange County area.

Swedlow Plastics Co.

...appoints Richard H. Malamphy to the position of Western contracts manager. Prior to joining Swedlow, Malamphy was manager of plastic sales for the Naugatuck division of the U. S. Rubber Co.

Varian Associates

...names Dr. William J. McBride, Jr., as head of the firm's newly organized systems group, a separate operating unit formed to advance product diversification. McBride is former manager of Varian's klystron development department.

Fabricated Steel Service, Inc.

...names I. W. Pitman as sales engineer. Prior to his new responsibilities with this North Hollywood firm, Pitman had 30 years of experience in steel fabrication, specializing in steel building, oil field specialties, aircraft ground handling equipment, and related fields.

Pacific Scientific Co.

...expanding its operations in the San Francisco Bay Area, names W. L. Hawks as district sales manager of the firm's San Francisco office. He will also be responsible for service activities of the company's two divisions in the area. Previously, he had served in the firm's Los Angeles office.

Northrop Aircraft, Inc.

...names Tom Hardgrove as plant engineer for its Anaheim division. Hardgrove formerly held the same position for Aerojet-General at Azusa. He is a prominent Western plant engineer, currently the Western regional vice president of the American Institute of Plant Engineers.

San Francisco Ordnance District



Col. J. M. Stark

...announces the return to command of Col. John Melvin Stark, who has been on two special tours of duty with the Army Ordnance Corps. His current assignment is multimillion dollar defense procurement in seven Northwestern states based on production and services offered by industry and research with which the District has worked since 1923.

Titanium Fabricators, Inc.

...has a new chief engineer—Wilson W. Petty. Prior to joining the Burbank, Calif., research and fabrication firm specializing in aircraft, industrial and commercial products of titanium, Petty held several key engineering positions at North American Aviations, Inc., that involved the engineering of titanium for specialty applications.

Hycon Electronics, Inc.

...appoints O. H. Mackley as vice president and general manager. Mackley joined Hycon last year as technical sales manager of the former military electronics division, and has served as manager of this electronics subsidiary of Hycon Mfg. Co., Pasadena, since March.

Boston Woven Hose & Rubber Co.

...assigns C. W. Kline to the new post of Western division manager. Kline, who was previously New England division manager, and has been with Boston Woven Hose & Rubber Co. 20 years, will now headquartered in Los Angeles.

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H. K. Porter Co., Inc.

...Riverside-Alloy metal division announces two recent appointments. A. W. Renken has been named plant superintendent and R. H. Wilson is now administrative assistant.

Johnson Pump Co. Div., Youngstown Sheet and Tube Co.

...appoints L. J. Haight as chief engineer. Prior to his new assignment, he was in charge of the company's atomic energy department. Before joining Johnson, Haight was assistant chief engineer of the Western Pipe and Steel shipyard in San Pedro.

The Sieracini Corp.

...has selected C. Hart Miller as executive vice president, general manager and a director of the Burbank, Calif., producer of plastic products for aircraft use. Miller resigned as vice president of administration of Northrop Aircraft's Northrop division to accept the position. Prior to joining Northrop in 1954, he was president of Piasecki Helicopter Corp.

Society of the Plastics Industry, Thermoplastic Pipe Division

...elects E. W. Baxter as vice-chairman of the Pacific Coast section. Baxter is sales manager of the plastic pipe division of Portco Corp., Vancouver, Wash.

B. F. Goodrich Tire Co.

...moves James M. Robbins to the Los Angeles plant as manager. Robbins was transferred from manager of manufacturing for the Goodrich headquarters in Akron.

Colorado Fuel and Iron Corp.

...assigns William Mohr as works manager, Pacific Coast division, with headquarters at C. F. & I.'s Oakland, Calif., plant. Mohr, previously a master mechanic at the Oakland plant, was most recently wire mill superintendent.

ADVERTISERS

in the November 1957
WESTERN INDUSTRY

A

Acme Chain Corporation	24
Acme Steel Company	63
Alden Equipment Co.	59
Alexander Machinery Company, Inc.	100
Allis-Chalmers Mfg. Co. Buda Division	15
American Blower Corporation Subsidiary of American Radiator & Standard Sanitary Corporation	12
American Monorail Co.	69
Ampco Metal, Inc.	17
Anaconda Wire & Cable Company Subsidiary of Anaconda Copper Mining Company	95

B

Babcock & Wilcox Co., The Tubular Products Div.	25
Bay State Abrasive Products Company	76 & 77
Benmalt Organization, Inc.	113
Blackmer Pump Company	99
Boroughs Manufacturing Company (Sub. American Metal Products Co. of Detroit)	60
Brammer Corporation	90
Buda Division Allis-Chalmers Mfg. Co.	15
Buffalo Forge Company	107
Bulldog Electric Products Co.	27
Byers, A. M., Company	32

C

Calstrip Steel Corporation	91
Clements-Cadillac Quik-Vac	92
Cleveland Vibrator Company	108
Coldwell, Banker & Company	104
Colorado Fuel and Iron Corporation, The	34
Colt Ventilation of America, Inc.	75
Columbia-Geneva Steel Division United States Steel Corporation	67 & 89
Copperweld Steel Co. Ohio Seamless Tube Division	64

D

Dayton Foundry	98
Dempster Brothers, Inc.	102
Denison Engineering Co.	22
Dolge Manufacturing Corporation	52 & 53
Downs Crane & Hoist Co.	97
Ducommun Metals & Supply Co.	Cover 3

E

Easterday Supply Co.	35
Eaton Manufacturing Company Reliance Division	70
Electrolift, Inc.	94
Empire Steel Building Company	98
Eutectic Welding Alloys Corp.	80 & 81

F

Fairbanks, Morse & Co.	20
Fernholz Machinery Company	88
Fiske Brothers Refining Co. Lubrimate Division	78
Flexible Steel Lacing Co.	99
Fornaciari Company	94 & 101

G

Galland-Henning Mfg. Co. Nopak Division	101
Garrett Supply Co. (Division of Garrett Corp.)	55
General Appraisal Co.	112
Globe Hoist Company	33
Goulds Pumps Western, Inc.	95
Grundler Crusher & Pulverizer Co.	62

H

Howard Supply Company	78, 85, 86, 87, 107, 108, 109, 110, 111, 112, 113 & 114
-----------------------	--

I

Illinois Testing Laboratories, Inc.	96
Imperial Oil & Grease Co., Inc.	85
Industrial Wire Products Corp.	108
Interstate Rubber Products Corp.	114

J

Jeffrey Manufacturing Company, The	16
Johnston, A. P., Company, Inc.	116
Jones & Laughlin Steel Corporation Strip Steel Division	Cover 4
Jorgensen, Earle M., Steel Company	7

K

Kaiser Steel Corporation	105
Kay-Brunner Steel Products, Inc.	30
Kingwell Brothers, Ltd.	86

L

Linde Company, A Division of Union Carbide Corporation	37
Lubrimate Division Fiske Brothers Refining Co.	78
Lufkin Foundry & Machine Co.	3

M

Milford Rivet & Machine Co.	72
Miller Electric Manufacturing Co., Inc.	56
Moore Dry Dock Company	21

N

National Supply Company, The Industrial Products Division	61
--	----

O

Oakite Products, Inc.	97
Ohio Seamless Tube Division of Copperweld Steel Co.	64

P

Pacific Gas and Electric Company	28
Pacific Pumping Company	60
Pacific Scientific Company	71
Pacific Telephone & Telegraph Co., The	93
Pastushin Industries, Inc. Hercules Boiler Div.	79
Pennzoil Company, The	90
Perin, Ira G., Co.	74
Peterson, F. Somers	106
Porte House	110
Puget Sound Fabricators, Inc.	96

R

Reliance Electric & Engineering Company	Cover 2
Revere Copper & Brass Incorporated	50 & 51
Reynolds Aluminum Supply Co.	23
Ridge Tool Company, The	18
Ryerson, Joseph T., & Son, Inc.	38

S

Scientific Lubricants Co.	62
Signode Steel Strapping Co.	6
Skil Corporation, The	31
Soule Steel Company	10 & 11
Sparkler Manufacturing Co.	5
Standard Conveyer Co.	82
Standard Horse Nail Corporation	94
Standard Oil Company of California The Stanley Works	19
Stanley Steel Strapping Division of The Stanley Works	57
Stephens-Adamson Mfg. Company Standard Products Division	26
Sturdi-Built Engineering Co.	87
Surety Rubber Co., The	98

T

Tapecoat Company, The	111
Towmotor Corporation	29
Trent Inc.	100

U

United States Steel Corporation Columbia-Geneva Steel Division	67 & 89
---	---------

V

Victor Equipment Company	73
Viking Pump Company	82

W

Webb, Jervis B., Co. of California Spanmaster Crane Division	66
WedgeLock Corp.	36
Windeler, George, Co., Ltd.	92

Y

Yale & Towne Mfg. Co.	
Yale Materials Handling Division	8 & 9

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